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Summary Proceedings

November 1987

Public Meetings for Views and Comments on the Conduct of the Innovative Clean Coal Technology Solicitation

Albuquerque, New Mexico, August 13, 1987
St. Louis, Missouri, September 3, 1987
Pittsburgh, Pennsylvania, September 10, 1987
Washington, D.C., September 22, 1987

CLEAN COAL Technology

U.S. Department Of Energy
OFFICE OF FOSSIL ENERGY
WASHINGTON, DC 20545

Public Meetings for Views and Comments on the Conduct of the Innovative Clean Coal Technology Solicitation

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Chapter 1

INTRODUCTION AND OVERVIEW

1.1 Introduction:

Four public meetings were convened by the Department of Energy (DOE) in August and September of 1987 in order to obtain views, comments, and recommendations with regard to the forthcoming Innovative Clean Coal Technology (ICCT) solicitation. In the sections that follow, brief descriptions are provided of the background to the ICCT solicitation and the public meetings, and how the meetings were conducted. Subsequent chapters of this report present the discussions that ensued at each of the meetings, and the views, recommendations, and concerns that were expressed by attendees. Finally, the report includes a compilation of the written comments that were received, and, in the appendix, a list of the organizations that were represented at the public meetings.

The meetings took place as follows:

1.	Albuquerque, New Mexico	Ramada Hotel Classic Thursday, August 13, 1987
2.	St. Louis, Missouri	Adam's Mark Hotel Thursday, September 3, 1987
3.	Pittsburgh, Pennsylvania	Pittsburgh Hilton Hotel Thursday, September 10, 1987
4.	Washington, D.C.	Sheraton Washington Hotel Tuesday, September 22, 1987

1.2 Background:

The Department of Energy's (DOE) Clean Coal Technology (CCT) Program had its genesis in August of 1984, when work commenced on the original solicitation for informational proposals and statements of interest. That "Section 321" Program Announcement, as it became known from the implementing section of Public Law No. 98-473, was published in the Federal Register on November 27, 1984. This first foray into surveying the private sector for eligible demonstration projects resulted in 175 responses distributed among 13 technology categories, and worth over $8 billion in total.

The Congress reacted to this industrial response by implementing the first funded CCT activity on December 19, 1985, when Public Law No. 99-190 was signed into law with a provision of about $400 million for a cost-shared financial assistance solicitation. The final Program Opportunity Notice, issued on February 17, 1986, produced 51 proposals for CCT demonstration projects, with private sector cost sharing in each instance of at least 50%.

Concurrent with, but independent of, these activities, in March of 1985, President Reagan appointed Drew Lewis to the position of U.S. Special Envoy on Acid Rain, and, at the same time, Prime Minister Brian Mulroney appointed William Davis as the Canadian Special Envoy. Charged with the responsibility "to assess the international environmental problems associated with transboundary air pollution, and then recommend actions that would solve them," the appointees in January of 1986 issued the Joint Report of the Special Envoys on Acid Rain, also popularly known as "the Lewis/Davis Report." The Special Envoys provided twelve recommendations, the first one of which was that the:

> *U.S. government should implement a five-year, five-billion-dollar control technology commercial demonstration program. The federal government should provide*

half the funding ... for projects which industry recommends, and for which industry is prepared to contribute the other half of the funding.

Probably the most important event in the history of the CCT Program was the decision by President Reagan on March 18, 1987, to seek $2.5 billion to fund the demonstration of innovative clean coal technologies (ICCT) over a five-year period, provided that appropriate projects are proposed that meet, among other things, cost sharing requirements similar to those provided in the aforementioned February 17, 1986, CCT solicitation. Accordingly, the Administration amended the FY 1988 budget request and supporting "outyear" estimates for the CCT Program, such that the Administration has requested the remaining $350 million from the CCT Reserve in FY 1988, and advanced appropriations of $500 million each year for Fiscal Years 1989 through 1992, for demonstration projects. The cost sharing requirements ensure that industry will invest an equal or greater amount over this period to stimulate deployment of ICCT.

On March 23, 1987, the Secretary of Energy announced that the 1988 and 1989 funding ($350 million and $500 million) would be combined into a single $850 million solicitation to be issued, subject to the provision of appropriations, prior to the end of calendar year 1987. It is this proposed $850 million ICCT solicitation that was the subject of the four public meetings.

Shortly thereafter, on May 21, 1987, J. Allen Wampler, the Assistant Secretary for Fossil Energy, testified before the Subcommittee on Energy and Power of the House Committee on Energy and Commerce, that:

The Department will ... conduct a series of public meetings to elicit comments from the private sector prior to the release of the next project solicitation. The public meetings ... will be held in different regions of the country to ensure a broad cross section of participation.

As a final background note, it is probably useful to review the objectives of the ICCT Program:

- Expand the suite of technologies available to utilize coal economically while reducing emissions.
- Obtain sufficient technical, economic, environmental, health, safety, and operational information at a scale large enough for the private sector to be able to make rational commercialization decisions.
- Strengthen the competitiveness of United States exports of coal and related technologies.

Pending additional guidance from the congressional appropriations process, DOE's guidelines for the ICCT solicitation are as follows:

- The ICCT projects are to be industry projects, with the DOE role being to oversee project progress.
- The evaluation criteria will be tailored as fully as practicable to the criteria suggested by the Special Envoys on Acid Rain.
- The financial provisions for cost sharing and recoupment will be similar to those in the previous solicitation.

1.3 ICTAP and the SEB:

In addition to the announcement of the intention to seek funding for the ICCT solicitation, President Reagan, on March 18, 1987, also stated that he is directing the Secretary of Energy to establish an advisory panel, known as the Innovative Control Technology Panel (ICTAP), to:

> *...advise the Secretary of Energy on funding and selection of innovative control technologies projects. Projects will be selected, as fully as practicable, using the criteria recommended by the [Special Envoys on Acid Rain, Drew Lewis of the United States, and William Davis of Canada].*

The inaugural meeting of ICTAP was held on September 30, 1987. At that time, the highlights of the public meetings were presented to the Panel. The ICTAP, as was noted in DOE's notice of the public meetings, is a primary recipient of the results of the meetings, and is an important audience for the present report.

In order to serve as a ready reference, the Lewis/Davis criteria for the ICCT projects, referred to above, are reproduced in full below as they appeared in the original Joint Report of the Special Envoys on Acid Rain:

> *Because this technology demonstration program is meant to be part of a long-term response to the transboundary acid rain problem, prospective projects should be evaluated according to several specific criteria. The federal government should co-fund projects that have the potential for the largest emission reductions, measured as a percentage of SO_2 or NO_x removed. Among projects with similar potential, government funding should go to those that reduce emissions at the cheapest cost per ton. More consideration should be given to projects that demonstrate retrofit technologies applicable to the largest number of existing sources, especially existing sources that, because of their*

> *size and location, contribute to transboundary air pollution. In short, although the primary purpose of this research program is to demonstrate the kinds of technologies that would be needed for any future acid rain control program, it should also result in some near-term reductions in U.S. air emissions that affect Canadian ecosystems.*
>
> *Furthermore, special consideration should be given to technologies that can be applied to facilities currently dependent on the use of high-sulfur coal. ... The commercial demonstration of innovative technologies that clean high-sulfur coal will help to reduce the economic consequences of any future acid rain control program [by substituting for coal-switching].*

The other primary recipient of the views, comments, and recommendations that ensued from the public meetings will be the Source Evaluation Board (SEB). The SEB, which will be formally appointed for the ICCT solicitation, will constitute a select group of government professionals whose role it will be to solicit and evaluate the proposals, and to report their findings to a Source Selection Official.

1.4 Meeting Planning and Format:

The public meetings were formally announced in the Federal Register of July 10, 1987, (52 FR 26124) under the heading, "Invitation for Public Views and Comments on the Conduct of the Innovative Clean Coal Technology Solicitation; Meetings." The notice reviewed the purpose of the meetings, provided a proposed outline of the anticipated solicitation, and identified "a number of specific issues and concerns that DOE is particularly interested in receiving public comments on":

1. Qualification criteria and preliminary evaluation requirements,
2. Proposal evaluation criteria and program policy factors,
3. Proposal preparation time,
4. National Environmental Policy Act (NEPA) strategy, and
5. Repayment of the government's cost-share.

Additional publicity was obtained by the issuance of a DOE News Release simultaneous with the publication of the Federal Register notice, and by a mass mailing of the notice to over 800 addresses of individuals who had previously responded to DOE solicitations or notices, or who had expressed an interest in being kept informed of CCT activities.

Pertinent information of possible use or interest to meeting attendees was compiled into a Background Information document (DOE/FE-0090) which was distributed at each of the four public meetings or provided upon request by mail or telephone. This report included the Federal Register notice of July 10, 1987, statements by the President and the Secretary of Energy of March 18 and 23, 1987, DOE's appropriations request for the ICCT effort, and four statements by J. Allen Wampler, Assistant Secretary for Fossil Energy, in testimony before congressional committees.

As was described in the Federal Register notice, each meeting commenced with a brief plenary session, which included introductory remarks and program overviews by DOE officials. The audience then briefly recessed and reconvened into discussion workshops, which ran concurrently in order to facilitate animated discussion in small groups and to make efficient use of the time available. All of the workshops discussed all of the same issues; the number of workshops varied from city to city in response to the attendance. In Albuquerque, New Mexico, and in St. Louis, Missouri, there were two discussion workshops each, while in Pittsburgh, Pennsylvania, four workshops were convened, and in Washington, D.C., three discussion workshops were adequate. Finally, attendees met in a closing plenary session in each city. The highlights and recommendations of each of the workshops were reviewed and summarized, and the meetings were concluded. The opening and closing plenary sessions were transcribed. However, there was no transcription of the discussion workshops; each workshop cochairman was responsible for preparing notes of the salient aspects of the proceedings. These workshop summaries are provided in Chapter 4 of this report. □

Chapter 2

SUMMARY ISSUES AND SUGGESTIONS

2.1 Introduction:

As was noted in Section 1.4, the meetings notice published in the Federal Register listed five issues and concerns of particular interest to DOE. Additional subjects were identified as noteworthy for discussion by the public both in person at the meetings and by correspondence in the form of written comments (discussed later in this report). This chapter provides capsule statements of the issues that were raised and summaries of the public's suggestions regarding these issues.

It is important to note, however, that this report reflects the views, opinions, and comments expressed by the public, and that inclusion here does not in any way reflect DOE's agreement with these statements. Additionally, DOE makes no representation and offers no assurance or commitment that DOE will attempt to incorporate, adopt, or accept these views, opinions, comments, and suggestions in the course of preparing the forthcoming ICCT solicitation. However, DOE does intend to fully consider and assess the merits of all feedback, oral and written, received from the public with regard to the solicitation.

2.2 Qualification Criteria:

2.2.1 Issue

Should qualification criteria, such as with regard to site availability, teaming arrangements, and financing, be more stringent than in the last solicitation?

2.2.2 Suggestion

In general, the qualification criteria used in the earlier solicitation are reasonable and adequate.

2.3 Evaluation Criteria:

2.3.1 Issues

How should evaluation criteria be written to adequately judge quality projects, while minimizing the burden on the offerors?

Should the solicitation provide for deselection if negotiations do not proceed at a satisfactory pace?

2.3.2 Suggestions

Stress technical innovation and marketability.

Financing should be weighed more heavily as compared to the technical aspects of the proposal than was the case in the previous solicitation.

Provide for proposal deselection if negotiations do not proceed at a satisfactory pace. Criteria for deselection should include project financing and teaming arrangements.

Implement the Lewis/Davis project criteria cautiously in order to avoid precluding consideration of meritorious projects. Projects should include a diversity of applications, technologies, and locations (including Western United States), and should include "grass roots" facilities.

2.4 Alternative Solicitation Mechanisms:

2.4.1 Issues

Would a "phase zero" approach to negotiated agreements be feasible?

What about a two-phase solicitation, e.g., a "qualification" phase followed by a "final proposal" phase, as opposed to the conventional single-proposal approach?

2.4.2 Suggestions

Consider a cost-shared "phase zero" which would go into effect subsequent to proposal selection, during which financing, teaming, etc., would be pursued, in accordance with negotiated milestones, leading to executed cooperative agreements. Failure to consummate agreements after a reasonable time interval, say, six to eighteen months, would result in deselection.

Alternatively, consider a two-phase solicitation mechanism, as follows:

• Issue solicitation:	60 days after legislation
• Submit qualification proposals:	30 days after solicitation
• Selection by DOE of proposals qualified to proceed to phase two:	30 days after qualification proposals received
• Submit final proposals:	60 days after notification by DOE to proceed to phase two
• Final DOE evaluation and project selection:	90 days after final proposals received
• Total time elapsed:	270 days from legislation to selection.

2.5 Proposal Preparation Time:

2.5.1 Issue

What is a reasonable time interval for proposal preparation, i.e., from date of issuance of the solicitation to due date for the proposals (assuming a conventional, single proposal, process)?

2.5.2 Suggestion

Allow at least 90 days for proposal preparation, as opposed to 60 days in the previous solicitation.

2.6 Environmental Requirements:

2.6.1 Issue

Were the requirements to satisfy the National Environmental Policy Act (NEPA) reasonable and appropriate in the last solicitation (as contained in Section III.27 of the PON)?

2.6.2 Suggestions

The NEPA strategy in the previous solicitation was reasonable and adequate.

However, the offeror, rather than DOE, should define the needs for environmental monitoring.

2.7 Recoupment:

2.7.1 Issue

What are possible alternative approaches to repayment of the Government's cost share that would be mutually agreeable to the Government and to the offeror?

2.7.2 Suggestions

In concept, recoupment of the Government's cost share is reasonable and appropriate, if profits are derived from the project.

Reimbursement should ensue from profits subsequent to the completion of the demonstration project. After the demonstration, the Government should consider the effects of recoupment on the competitiveness of the technology, if any.

For regulated electric utilities, recoupment should not be required from continued operation of the project beyond the demonstration program.

Repayment plans should permit flexibility of terms, payback schedule, etc.

2.8 Cost Sharing:

2.8.1 Issues

Is the 50 percent cost sharing requirement reasonable and appropriate?

What about the requirement for 50 percent cost sharing in each phase?

2.8.2 Suggestions

Consider requiring 50 percent cost sharing for the overall project, rather than on a phase-by-phase basis.

Consider counting the loss of generating capacity during the demonstration toward electric utility cost sharing.

2.9 Regulatory Incentives:

2.9.1 Issue

Should the solicitation favor projects that are located in states that offer favorable regulatory incentives for clean coal technology projects?

2.9.2 Suggestion

Do not favor projects located in states that offer regulatory incentives for clean coal technologies, because of the possible inequities that may result. □

Chapter 3

WELCOMING REMARKS

3.1 Explanatory Note

At three of the public meetings, St. Louis, Pittsburgh, and Washington, the attendees were welcomed by Mr. J. Allen Wampler, Assistant Secretary for Fossil Energy. In Albuquerque, the public was addressed by Mr. Donald L. Bauer, Principal Deputy Assistant Secretary for Fossil Energy. For two of these presentations, St. Louis on September 3 and Washington on September 22, DOE issued prepared texts of the speeches, provided here as Sections 3.2 and 3.3. The messages conveyed by Mr. Bauer in Albuquerque and by Mr. Wampler in Pittsburgh, although not contained in this report, were essentially similar to those presented by Mr. Wampler in St. Louis and Washington.

3.2

Remarks by J. Allen Wampler of September 3, 1987

OPENING PLENARY SESSION
ST. LOUIS, MISSOURI

FOSSIL ENERGY SPEECHES

U.S. DEPARTMENT OF ENERGY OFFICE OF FOSSIL ENERGY

Clean Coal Technology

The New Solicitation

Remarks by
J. Allen Wampler
Assistant Secretary
for Fossil Energy
U.S. Department of
Energy
to the Clean Coal
Technology Public
Meeting in St.
Louis, Missouri,
September 3, 1987.

Today is our second public meeting in preparation for this fall's clean coal project solicitation. We started in Albuquerque and will move on to Pittsburgh and then back to Washington. If all this sounds like a traveling caravan, you may be right – but it's a traveling caravan that I believe is important for those of us who will carry out the President's program and for those of you who may ultimately become active participants.

When President Reagan told Prime Minister Mulroney that he would endorse the recommendations of the U.S. and Canadian Envoys on Acid Rain, he made the commitment based on one solid piece of evidence -- that American industry was ready to join the government as full, cost-sharing partners...that it would be private industry that would propose the project ideas...that would pull together the teams of equipment manufacturers, coal suppliers and end-users...that it would be private industry that would determine which technologies were most promising and indicate those choices by backing selected technologies with their corporate resources.

So it makes a great degree of sense to us, if we expect the private sector to be full participants in the President's expanded clean coal program, that we begin early in the program's formulation to obtain the private sector's advice and counsel.

That's why we are here today.

Our purpose is to hear your thoughts...to hear them expressed in a way that we can use them in putting together the forthcoming solicitation. We will also be conveying the ideas and opinions that come out of these meetings to the Secretary's Innovative Control Technology Advisory Panel, the group that will serve, in many ways, as the steering committee for this program.

We will be conveying the ideas that come out of these meetings to the Innovative Control Technology Advisory Panel.

We are on a fast track. Now I know that it seems like every government program is on a "fast track." And many of them don't seem to move at all, much less move fast, slow or otherwise. But there is a sense of expediency in the Clean Coal program for several very important reasons:

Clean Coal -- The Preferred Environmental Approach

First, just as we continue to compile evidence that a technology route is clearly the preferred path to take in addressing both our energy and environmental goals, the chorus of acid rain control advocates, in Congress and elsewhere, continues to increase -- in decibel level if not in scientific logic.

Congress will return to Washington in the next few days and in their midst will be those who never met a problem they didn't believe they could regulate out of existence. And the arguments and debate will start again.

There will be those who don't believe we are moving fast enough in the area of emissions reductions -- that we need to spend something on the order of $100 to $200 billion over the next 20 years to accelerate the decline in sulfur emissions using conventional technology and coal switching. And in one sense, they are exactly right -- pass acid rain legislation today, and there would be a sharp drop in emission levels when the new regulations went into effect.

But now let me tell you what they don't tell you. We have looked at the long-term profile of emission reductions based on various scenarios, including the acid rain bills pending on the Hill. By long-term, I don't mean the 1990s or the year

2000. I mean outward to the year 2030. And guess what the trend lines show?

Yes, there would be an immediate reduction in sulfur emissions. But by the year 2030, emission levels would be no different than they would have been had we continued under the current provisions of the Clean Air Act. No difference.

Why? Because if acid rain legislation is enacted today, development of new, more effective pollution control equipment will stop dead in its tracks. If there is a legally mandated deadline to meet in the future, utilities are not going to divert scarce resources to new, experimental hardware.

If acid rain legislation is enacted today, development of new, more effective pollution control equipment will stop dead in its tracks.

They will go with what is proven, even though it is more expensive, less efficient and imposes additional costs on their consumers.

That means, for the most part, retrofitting scrubbers to existing power plants – scrubbers that, for many installations, could cost more than the original power plant itself – scrubbers whose cost will likely be added on top of the costs of plant life extension since that is becoming more of a factor in utility decisionmaking. And even with all that, once the dollars have been spent and these existing plants reach the end of their useful lifes, the gains made by the new regulations will dissipate – and that will happen by the year 2030.

Meanwhile, no new technology will be developed and deployed. The state-of-the-art in the year 2030 will be fundamentally the same as the state-of-the-art in the 1960s. And the nation will have spent $100 to $200 billion dollars, and sulfur emissions in the year 2030 will be the same as if nothing had changed. In fact, by the time we get to the year 2030 under an acid rain control scenario, sulfur emissions will actually be rising again because power demand will be increasing. And we will again be experiencing the acute limitations of today's technology. We will not have solved the emission problem, simply deferred it as our legacy for the next generation. That's the story acid rain control advocates don't tell you. But *we* will.

And that story has another chapter. We've plotted several scenarios for emission reduction strategies. In addition to the "business as usual" approach and the passage of acid rain control legislation, we have factored into the equation the emergence of clean coal technologies -- technologies like fluidized bed combustion and combined cycle gasification -- technologies that offer fundamental improvements in economics and effectiveness over vintage-1960 pollution controls.

And if we plot the sulfur reductions that occur because these new technologies enter the marketplace, the trend line starts downward. And most importantly, it *continues* downward, through the year 2030 and well beyond.

Oh, and one other item. The data we will be presenting show that on a unit plant basis, these additional emission reductions could be obtained at a levelized cost of 3 to 9 mills per kilowatt-hour. That's compared to as much as 12 mills per kilowatt-hour to retrofit scrubbers onto existing plants. But perhaps even more significantly, if the models are run on a system-wide basis -- factoring in more economic power dispatching, increased reliability and fuel flexibility, the cost of additional emission reduction over conventional technologies goes to *zero*.

...if the models are run on a system-wide basis...the cost of additional emission reduction... goes to zero.

Let me say it another way, if we can adequately demonstrate technologies like fluidized bed combustion and combined cycle gasification, and they are introduced into the marketplace either as repowering options or for new power stations, their increased power output will actually lower the cost of electricity compared to conventional electric generating units. And because emission controls are inherent in the technology, the potential is there to gain sizeable emission reductions at no additional cost to utilities or consumers.

That's why we need to get this program underway.

There's another reason.

Clean Coal -- Expanding Retrofit Options

We're three years away from completing a 10-year, $500 million scientific study of the acid rain phenomena. Those three years are important to complete a careful, systematic and rational approach to understanding the causes and effects of acid rain. But at the end of those three years, if the data tells us that further controls are required and required in a short timeframe, then it is important that we have retrofit technologies other than just the wet scrubber.

As the Special Envoys said in their report to the U.S. and Canadian governments: "If the menu of control options was expanded, and if the new options were significantly cheaper yet highly efficient, it would be easier to formulate an acid rain control plan that would have broader public appeal."

The report shows...that scrubber manufacturers will not be able to cope with the high demands placed on them...by currently proposed legislation.

And as right as the Special Envoys were, there may be a more practical reason.

We will soon issue a report prepared by one of our contractors that examines the vendor capability to supply flue gas desulfurization systems for coal-fired boilers under an acid rain control program. The report shows the very real possibility that scrubber manufacturers will not be able to cope with the high demands placed on them for supplying FGD units at the level and timeframe required by currently proposed acid rain control legislation.

It will take anywhere from 14 to 18 years under the most plausible assumptions to deploy the amount of FGD retrofits to attain 8 to 10 million tons of SO_2 emission reduction per year over 1985 levels. That time frame is well outside the mandated schedules imposed by today's pending acid rain legislation. But well within that time frame, we could have a clean coal technology demonstration and deployment program up and running and fixing the acid rain problem rather than just patching it.

But it is important that we get started.

There is a third reason.

Clean Coal -- A "Window" for Repowering

Today's utilities are beginning to face a twin dilemma. On one hand, their fleet of power plants built in the 1950s, 60s and 70s is aging. They are approaching the end of their intended lives. In the 1960s and early 70s, the average system age for the nation's power plants stayed level at about 11 years. But with fewer plants built in the last decade, today's the average system age is approaching 25 years. By the year 2000, roughly half of the fossil fuel-fired electric capacity in this country will be 30 years old or older.

In the eastern U.S., there are 410 units of uncontrolled coal-fired utility capacity, 100 megawatts or larger, that were placed into service before 1975. Beginning in the mid-1990s, utilities will have to make some fundamental choices about many of these units ... to retire them, patch them up, or repower them with new technology.

Beginning in the mid-1990s, utilities will have to make some fundamental choices...to retire (aging plants), patch them up, or repower them....

At the same time, demand for electricity is projected to continue growing and today's reserve margins will begin to decline. Even at a modest 2 percent growth rate, the U.S. could require as much as 100,000 megawatts of additional, new capacity this century -- beyond what is committed today.

So utilities are looking at two decisions -- what to do about older plants and when, if necessary, to build new capacity? That's where some of the new clean coal technologies enter the picture. Concepts such as fluidized bed combustion or gasification combined cycle can be installed at an existing plant as part of an overall refurbishing. The result is a plant with a new 20- to 30-year lease on life, with sulfur emission reductions of 90 to 99-plus percent, and with an increased output of 50 to 150 percent.

We see the potential for clean coal repowering technology to add anywhere from 19,000 to 156,000 megawatts of increased capacity between 1995 and the year 2010. That could be a major chunk, if not all, of the additional generating capacity needed at the current growth rate...capacity that would be added at existing sites, with existing operating permits. Utilities could stretch out or defer a new wave of baseload facilities -- and avoid all of the associated headaches

that new construction would cause for both the utility and the effected community.

Will it happen? It will happen if the technology is adequately demonstrated in time to be a factor in utility decision-making. We see that window to be in the early to mid 1990s, and that's why we've geared our Clean Coal program to a five-year timeframe rather than stretching it out.

Miss that window, and utilities will be forced to simultaneously add new capacity at the same time they are making major upgrades of existing equipment. That's a large financial burden, one we believe can be reduced substantially by having clean coal concepts available. But the window will not remain open for long.

Now let me add a fourth reason for an accelerated clean coal program, and then I will sit down.

We have the opportunity to make the U.S. the world's showcase for clean coal technologies.

Clean Coal -- Boosting U.S. Competitiveness

It has to do with a word we're hearing a lot these days, whether it's in Washington or St. Louis. The word is "*competitiveness.*"

Simply put, for the next several years, the Clean Coal Technology program may provide the single most significant advantage that this nation could have in the international coal market and in the global race to develop new energy technologies. And that advantage applies to both the East and the West.

We have the opportunity to make the U.S. the world's *showcase* for clean coal technologies -- a place where both domestic and foreign buyers can come and "kick the tires" of a new generation of sophisticated coal hardware burning U.S. coal.

If this program is successful, by the early to mid 1990s, we will have in place a full complement of demonstration plants up and running -- each showcasing a new clean coal technol-

ogy ... advanced combustors, new scrubbing concepts, new coal cleaning techniques. The ability to show a prospective overseas customer an actual, operating facility -- running on U.S. coal -- rather than just a drawing board concept or an engineering prototype will be a very persuasive inducement to potential buyers.

Currently, the U.S. had a technological edge over most of its competitors in clean coal technologies. However, considering the progress that other countries are making, there is no guarantee that the U.S. can hold its lead through the next decade.

Therefore, it is important that we move forward with this program. It is important for our energy and environmental goals here at home and for our trading and international competitiveness goals overseas.

That's the importance we place on this program. That's why we can't afford to spend several years and several solicitations trying to figure out the best way to attract quality private sector participation in constructive partnerships. We need to know how to do that from Day One. And that's why we have asked you here today.

Now, obviously, we can't get this program moving while I'm up here talking. So I will sit down and turn more of my attention to listening.

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J. Allen Wampler was sworn in as the Department of Energy's Assistant Secretary for Fossil Energy on October 14, 1986. He had been nominated by President Reagan on August 7, 1986. As Assistant Secretary for Fossil Energy, Mr. Wampler manages the Department's coal, petroleum and natural gas research and development programs as well as the nation's Strategic Petroleum Reserve and Naval Petroleum and Oil Shale Reserves.

3.3

Remarks by J. Allen Wampler of September 22, 1987

OPENING PLENARY SESSION
WASHINGTON, D.C.

FOSSIL ENERGY SPEECHES

U.S. DEPARTMENT OF ENERGY OFFICE OF FOSSIL ENERGY

Clean Coal Technology

Washington D.C. Public Meeting

Remarks by J. Allen Wampler Assistant Secretary for Fossil Energy, U.S. Department of Energy to the Clean Coal Technology Public Meeting in Washington, D.C. on September 22, 1987

This is the fourth and final stop on what I've called the "Clean Coal Traveling Caravan." And when we first began planning these public meetings a few months ago, we could not have picked a better time to hold one in Washington than right now.

As many of you know, last Friday, the Senate Appropriations subcommittee -- the Subcommittee on the Interior and Related Agencies -- approved the full amount of the Administration's FY 1988 and FY 1989 request for Clean Coal funding -- $850 million.

Now, I know that one subcommittee vote does not assure that the funding level will eventually be appropriated, but obviously this was a very positive step in the right direction. And because of the coincidence in timing with this meeting, it gives me an opportunity to express publicly my appreciation for the hard work done on both sides of the aisle, by both members and staffs, on the appropriations committee.

As I've said before, we have the opportunity today, for the first time in a long time, to forge a truly bipartisan coalition to get this important program off the ground in full force. And, as I hope my remarks this morning will convey, it is our desire to do just that.

This is an important program for this country and its future economic and national security. It is an important program from the standpoint of continued progress in bettering the quality of our environment and that of our neighbors. And it is an important program from the standpoint of maintaining this nation's competitive edge in the development and deployment of new energy technologies.

When President Reagan told Prime Minister Mulroney that he would endorse the recommendations of the U.S. and Canadian Envoys on Acid Rain, he made the commitment based on one solid piece of evidence -- that American industry was ready to join the government as full, cost-sharing partners...that it would be private industry that would propose the project ideas...that would pull together the teams of equipment manufacturers, coal suppliers and end-users...that it would be private industry that would determine which technologies were most promising and indicate those choices by backing selected technologies with their corporate resources.

...if we expect the private sector to be full participants in the President's expanded clean coal program, ...we (should) begin early in the program's formulation to obtain the private sector's advice...

So it makes a great degree of sense to us, if we expect the private sector to be full participants in the President's expanded clean coal program, that we begin early in the program's formulation to obtain the private sector's advice and counsel.

That's why we are here today. Our purpose is to hear your thoughts...to hear them expressed in a way that we can use them in putting together the forthcoming solicitation. We will also be conveying your ideas and opinions to the Secretary's Innovative Control Technology Advisory Panel beginning at their first meeting next week. This is the group that will serve, in many ways, as the steering committee for this program.

And it has come as no surprise to us that the comments and suggestions coming out of the first three meetings have been extremely useful and well thought-out.

We've heard opinions on what could be done to speed up the negotiation process. Some have suggested a two-phase solicitation process.

We've heard discussions on why the qualification criteria should be made more stringent -- and other opinions on why they should be less stringent.

We've heard rationale for why the scope of the solicitation should be limited to utility applications -- and why it should be expanded to include industrial sources -- or expanded even more to include oil and gas conversions.

We've heard opinions on project duplications -- for multiple demonstrations -- for projects that apply to high-sulfur coal and low-sulfur coal.

And yes, where would a clean coal meeting be without discussions on repayment provisions?

But throughout all of the public meetings to date, there seems to be a general consensus -- that it's time to get on with the job. And that's our opinion exactly.

We should be on a fast track -- for several, very important reasons:

First, just as we continue to compile evidence that a technology route is clearly the preferred path to take in addressing both our energy and environmental goals, the chorus of acid rain control advocates, in Congress and elsewhere, continues to increase -- in decibel level if not in scientific logic.

We can either go the way of conventional control technology, mandated by law...Or we can move toward a new generation of more efficient, cleaner concepts whose market drivers may be the merits of the technology itself.

There are still those in Congress who never met a problem they didn't believe they could regulate out of existence. And if some of you saw the Wall Street Journal article last week, it very correctly conveyed the impression that, in many ways, we have reached a fork in the road. We can either go the way of conventional control technology, mandated by law into greater use. Or we can move toward a new generation of more efficient, cleaner concepts whose market drivers may be the merits of the technology itself.

Those who believe we ought to go with what's proven will be willing to convince the American people that they must spend something on the order of $100 to $200 billion over the next 20 years to achieve a better environment.

Those who prefer the technological approach will recognize that an investment of $2.5 billion in federal funds over the next five years -- matched by a comparable amount from the private sector -- could open the doors to an era in which emissions will not only drop but continue dropping long after acid rain bills have lost their effectiveness.

We've looked at the long-term profile of emission reductions based on various scenarios, including the acid rain bills pending on the Hill. By long-term, I don't mean the 1990s or the year 2000. I mean outward to the year 2030. And the trend lines send an important message. Yes, there would be an immediate reduction in sulfur emissions under an acid rain control scenario. But by the year 2030, emission levels would be no different than they would have been had we continued under the current provisions of the Clean Air Act. No difference.

If there is a legally mandated deadline to meet in the future, utilities are not going to divert scarce resources to new, experimental hardware.

Why? Because if acid rain legislation is enacted today, development of new, more effective pollution control equipment will stop dead in its tracks. If there is a legally mandated deadline to meet in the future, utilities are not going to divert scarce resources to new, experimental hardware. They will go with what is proven, even though it is more expensive, less efficient and imposes additional costs on their consumers.

That means, for the most part, retrofitting scrubbers to existing power plants -- scrubbers that, for many installations, could cost more than the original power plant itself -- scrubbers whose cost will likely be added on top of the costs of plant life extension since that is becoming more of a factor in utility decisionmaking. And even with all that, once the dollars have been spent and these existing plants reach the end of their useful lifes, the gains made by the new regulations will dissipate -- and that will happen by the year 2030.

Meanwhile, no new technology will be developed and deployed. The state-of-the-art in the year 2030 will be fundamentally the same as the state-of-the-art in the 1960s. And the nation will have spent $100 to $200 billion dollars, and sulfur emissions in the year 2030 will be the same as if nothing had changed.

In fact, by the time we get to the year 2030 under an acid rain control scenario, sulfur emissions will actually be rising again because power demand will be increasing. And we will again be experiencing the acute limitations of today's technology. We will not have solved the emission problem, simply deferred it as our legacy for the next generation. That's the story acid rain control advocates don't tell you. But we will.

And that story has another chapter. We've plotted several scenarios for emission reduction strategies. In addition to the "business as usual" approach and the passage of acid rain control legislation, we have factored into the equation the emergence of clean coal technologies – technologies like fluidized bed combustion and combined cycle gasification – technologies that offer fundamental improvements in economics and effectiveness over vintage-1960 pollution controls.

...if we plot the sulfur reductions that occur because (of) these new technologies ...SO_2 emissions go down and stay down.

And if we plot the sulfur reductions that occur because these new technologies enter the marketplace, the trend line starts downward. And most importantly, it continues downward well beyond the time when emissions turn upward again on the acid rain scenario. SO_2 emissions go down and stay down.

Oh, and one other item. The data we will be presenting show that on a unit plant basis, these additional emission reductions could be obtained at a levelized cost of 3 to 9 mills per kilowatt-hour. That's compared to as much as 12 mills per kilowatt-hour to retrofit scrubbers onto existing plants. But perhaps even more significantly, if the models are run on a system-wide basis – factoring in more economic power dispatching, increased reliability and fuel flexibility, the cost of additional emission reduction over conventional technologies goes to zero.

Let me say it another way, if we can adequately demonstrate technologies like fluidized bed combustion and combined cycle gasification, and they are introduced into the marketplace either as repowering options or for new power stations, their increased power output will actually lower the cost of electricity compared to conventional electric generating units. And because emission controls are inherent in the

technology, the potential is there to gain sizeable emission reductions at no additional cost to utilities or consumers.

That's why we need to get this program underway. There's another reason.

Last week, the National Acid Precipitation Assessment Program presented its interim assessment. It showed that acid rain problems are not worsening -- we're not standing on the precipice of environmental disaster. We have the time to complete a thorough, well-thought-out analysis.

...the National Acid Precipitation Assessment Program presented its interim assessment. It showed that we're not standing on the precipice of environmental disaster.

We're three years away from completing that 10-year, $500 million study of the acid rain phenomena. Those three years are important to complete a careful, systematic and rational approach to understanding the causes and effects of acid rain. But at the end of those three years, if the data tells us that further controls are required and required in a short timeframe, then it is important that we have retrofit technologies other than just the wet scrubber.

As the Special Envoys said in their report to the U.S. and Canadian governments: "If the menu of control options was expanded, and if the new options were significantly cheaper yet highly efficient, it would be easier to formulate an acid rain control plan that would have broader public appeal."

There is a third reason.

Today's utilities are beginning to face a twin dilemma. On one hand, their fleet of power plants built in the 1950s, 60s and 70s is aging. They are approaching the end of their intended lives. In the 1960s and early 70s, the average system age for the nation's power plants stayed level at about 11 years. But with fewer plants built in the last decade, today's the average system age is approaching 25 years. By the year 2000, roughly half of the fossil fuel-fired electric capacity in this country will be 30 years old or older.

In the eastern U.S., there are 410 units of uncontrolled coal-fired utility capacity, 100 megawatts or larger, that were placed into service before 1975. Beginning in the mid-1990s, utilities will have to make some fundamental choices about

many of these units ... to retire them, patch them up, or repower them with new technology.

At the same time, demand for electricity is projected to continue growing and today's reserve margins will begin to decline. Even at a modest 2 percent growth rate, the U.S. could require as much as 100,000 megawatts of additional, new capacity this century -- beyond what is committed today.

Even at a modest 2 percent growth rate, the U.S. could require as much as 100,000 megawatts of additional, new capacity this century -- beyond what is committed today.

So utilities are looking at two decisions -- what to do about older plants and when, if necessary, to build new capacity? That's where some of the new clean coal technologies enter the picture. Concepts such as fluidized bed combustion or gasification combined cycle can be installed at an existing plant as part of an overall refurbishing. The result is a plant with a new 20- to 30-year lease on life, with sulfur emission reductions of 90 to 99-plus percent, and with an increased output of 50 to 150 percent.

We see the potential for clean coal repowering technology to add anywhere from 19 to 156,000 megawatts of increased capacity between 1995 and the year 2010. That could be a major chunk, if not all, of the additional generating capacity needed at the current growth rate...capacity that would be added at existing sites, with existing operating permits. Utilities could stretch out or defer a new wave of baseload facilities -- and avoid all of the associated headaches that new construction would cause for both the utility and the effected community.

Will it happen? It will happen if the technology is adequately demonstrated in time to be a factor in utility decision-making. We see that window to be in the early to mid 1990s, and that's why we've geared our Clean Coal program to a five-year timeframe rather than stretching it out.

Miss that window, and utilities will be forced to simultaneously add new capacity at the same time they are making major upgrades of existing equipment. That's a large financial burden, one we believe can be reduced substantially by having clean coal concepts available. But the window will not remain open for long.

Now let me add a fourth reason for an accelerated clean coal program, and then I will sit down.

It has to do with a word we're hearing a lot these days here in Washington. The word is "competitiveness."

Simply put, for the next several years, the Clean Coal Technology program may provide the single most significant advantage that this nation could have in the international coal market and in the global race to develop new energy technologies. And that advantage applies to both the East and the West.

We have the opportunity to make the U.S. the world's showcase for clean coal technologies – a place where both domestic and foreign buyers can come and "kick the tires" of a new generation of sophisticated coal hardware burning U.S. coal. If this program is successful, by the early to mid 1990s, we will have in place a full complement of demonstration plants up and running – each showcasing a new clean coal technology ... advanced combustors, new scrubbing concepts, new coal cleaning techniques. The ability to show a prospective overseas customer an actual, operating facility – running on U.S. coal – rather than just a drawing board concept or an engineering prototype will be a very persuasive inducement to potential buyers.

Currently, the U.S. has a technological edge over most of its competitors in clean coal technologies. However...there is no guarantee that the U.S. can hold its lead...

Currently, the U.S. has a technological edge over most of its competitors in clean coal technologies. However, considering the progress that other countries are making, there is no guarantee that the U.S. can hold its lead through the next decade.

Therefore, it is important that we move forward with this program. It is important for our energy and environmental goals here at home and for our trading and international competitiveness goals overseas.

That's the importance we place on this program. That's why we can't afford to spend several years and several solicitations trying to figure out the best way to attract quality private sector participation in constructive partnerships. We need to know how to do that from Day One.

So that's why we have asked you here today. Now, obviously, we can't get this program moving while I'm up here talking. So I will sit down and turn more of my attention to listening.

J. Allen Wampler was sworn in as the Department of Energy's Assistant Secretary for Fossil Energy on October 14, 1986. He had been nominated by President Reagan on August 7, 1986. As Assistant Secretary for Fossil Energy, Mr. Wampler manages the Department's coal, petroleum and natural gas research and development programs as well as the nation's Strategic Petroleum Reserve and Naval Petroleum and Oil Shale Reserves.

Chapter 4

SUMMARY PROCEEDINGS OF THE DISCUSSION WORKSHOPS

4.1

The First Public Meeting

TWO DISCUSSION WORKSHOPS

ALBUQUERQUE, NEW MEXICO
AUGUST 13, 1987

- The concept of establishing key milestones as indicators of progress through a phase zero and the subsequent negotiation process was believed to be a good idea. These milestones would be mutually agreed upon, as well as the consequences associated with failing to meet any such milestone.

3. Several innovative ideas with regard to the procurement process were introduced and discussed:

   - In the first case, it was suggested that DOE pick two or three times as many projects as it had funds to support. Each of these projects would be of interest to DOE and would, in themselves, accomplish the goals of the solicitation. Subsequent to the selection date, the industrial participants and DOE would begin to negotiate each project. The first project that successfully completed negotiations would be funded, the second project for which negotiations were successfully concluded would be funded next, and so on, until all funds were used (i.e., a "first come, first served" approach). A number of possible difficulties associated with this approach were also noted and discussed.

   - Alternatively, it was suggested that DOE support a phase zero activity for many more projects than could be supported by the funds available. After a period specified in the PON for the formulation of the critical aspects of the projects, the projects again would be evaluated under predetermined criteria and a selection made of those worthy of continuation beyond phase zero. The winning projects' total cost to the Government would then equal the funds available.

4. The concept of a conditional commitment was introduced as a means of accelerating the negotiation process. In this concept, both parties would agree to milestones as a measure of performance, with the failure to meet some milestones and/or other measure of progress resulting in the unilateral withdrawal of the proposal by the industrial participant.

B. FINANCING

1. An animated discussion was held on how to get utilities involved without increasing the cost of power to the consumer. There was general agreement on the idea that the financing of the project must be such that the consumer's rates remain unaffected.

2. The utility perspective should be recognized in determining cost sharing. These incentives must recognize that there is not much demand for new power:

   - Some arrangements must be made that would protect the utility when there is a downward spiral of electricity costs.
   - Some incentives to the utilities are required that would keep most of the risk on the DOE side of the arrangement.
   - When considering utilities and their minimal ability to accommodate risk, an innovative idea was introduced and discussed, whereby the overall project would be divided into:

     Low Risk part -- supported by the utility; that part of the project most similar to the regular business of the utility (i.e., a boiler modification, an advanced gas turbine, etc.). The utility would purchase and install this part of the project such that it could be integrated and operated with the High Risk part of the project.

     High Risk part -- supported by DOE; that part of the project that is the most developmental in concept or application (i.e., innovative gasifier, new hot gas cleanup system, etc.). The equipment would be designed, installed and integrated with the Low Risk section sponsored by the utility.

     When integrated, the project would be operated jointly by the utility or other industrial participant to accomplish the goals of DOE.

     This approach was considered as having a better chance for the utilities to get funds and/or participate.

3. Very strong positions were voiced about the participation of the state public utility commissions (PUC) in the creation, application or measurement of incentives for the utilities. In general, it was believed that since it is impossible to get all state PUC's to offer the same or similar incentives, any participation on their part prejudices the competitive position of a utility and/or an industry located under the control of a non-participating state PUC.

4. Cost sharing should be on the basis of industrial participation at a minimum of 50% for the total project, not phase by phase.

C. REPAYMENT

1. Flexibility in the methods or means by which the funds could be returned to DOE was a concept repeated many times.

2. The concept of conditional commitment was introduced as an idea for repayment that envisioned:

   - At the time of negotiation of the cooperative agreement, the participant accepts the obligation to repay the Government's funds according to the criteria specified in the PON (i.e., conditional commitment).
   - In signing the conditional commitment, however, he reserves the right to identify the amount and source of funds at a later date when the merits of the technology, suitability of markets, applications, etc., are known. It was noted that in general this would occur at the end of the project and at the start of the commercialization.

3. The impact of the requirement for "economic dispatch" in the operation of a utility on its ability to finance or repay the Government's share of participation was discussed:

   - Representatives of the utilities suggested that DOE work for an exception to the PUC requirement for "economic dispatch" by those utilities that are participating in a clean coal project and which, as a result, may be paying a higher cost for fuel from the

experimental facility and producing electricity at a higher cost than available to their system from other sources.

D. GENERAL COMMENTS

Several additional general observations were made at various times during the discussions, including:

1. Some thought should be given to including in the PON a specific category for industrial projects.

2. The decision to fund a project that further develops a foreign technology should be based upon the degree to which it provides new and usable information:

   - It was generally concluded that it is impossible to distinguish between U.S. and foreign firms.
   - Even if you could make a distinction, it probably would not be a good idea to exclude foreign firms or technologies.

3. The DOE should distribute the draft PON for review and comment before the final version is published.

4. Strong opinions were expressed against the idea of tightened emissions regulations as well as any approach that would attempt to blend support for CCT along with some legislated decrease in the amount of allowable emissions.

4.2

The Second Public Meeting

TWO DISCUSSION WORKSHOPS

ST. LOUIS, MISSOURI
SEPTEMBER 3, 1987

4.2.1 Discussion Workshop Number 1

PUBLIC MEETING OF SEPTEMBER 3, 1987
ST. LOUIS, MISSOURI

Howard Feibus, Chairman
George G. Weth, Cochairman

This session was attended mainly by representatives from power companies, state agencies, and universities, with only one major vendor available to represent the viewpoint of U.S. manufacturers.

Discussions of proposal preparation time included several comments on qualification criteria. It was suggested that a minimum of 90 days was essential for proposal preparation, especially if the qualification criteria were to be the same as or more stringent than the February 1986 solicitation for the clean coal demonstration projects. It was also suggested that the quality of proposals would be increased if 120 days were allowed. It still was the general feeling that even 90 days would be limiting; it still would be difficult to arrange full and binding commitments for teaming arrangements, and full financial commitments would be nearly impossible. One utility said financial plans could be discussed, but to issue bonds could take as long as 180 days after selection. Site availability and commitments should not and would not pose any particular problem. The use of Lewis/Davis guidelines as part of the qualification criteria was more than acceptable to this group, provided it would allow repowering and grass roots plants as well as retrofit to existing units.

It was agreed that all projects should be at or near commercial size. However, DOE should not exhibit any partiality in selection based on size and that a broad range of technologies should be addressed. One concern was expressed with regard to financial commitments for large projects in that proposal costs estimates are accurate to no better than plus or minus 25% and, therefore, commitments should be on a phase-by-

phase basis. The requirement for cost sharing in each phase by project, and for preliminary cost estimates, may force some proposers to bid on the "high side" to ensure maximum DOE participation.

The discussion of informational requirements by DOE on environmental impacts and market analysis resulted in two separate approaches: (1) the utilities felt that it was proper to supply the information based on their application, but DOE should do the overall analysis; (2) the vendor felt that, while DOE should do the analysis, the vendors should also provide their analysis and market information since they can best estimate the competitiveness of their technology.

On the subject of patent and data rights for large business, it was suggested that DOE consider mechanisms to have waivers in place at or shortly after signing of the cooperative agreement for qualified participants.

The final and most active discussion area was repayment/recoupment. The utilities voiced a concern that they and others would be very reluctant to participate in the program if required to repay with "net revenues" from operations of the demonstration plant beyond the operating phase. The DOE should reconsider repayment requirements to provide relief for regulated utilities because PUC's do not allow for demonstration plants in the rate base. The DOE should also take into consideration the fact that PUC regulations vary drastically from state to state and thus may limit the ability of many utilities to compete in this program. Utilities also expressed grave concern with regard to being responsible for the recoupment of vendors or subcontractors, since they must then assume a financial burden for up to 20 years for contracts with these suppliers. It was stated that the responsibility of public institutions and not-for-profit organizations should be clearly defined in the solicitation as they, too, need relief from repayment provisions.

The vendors expressed the point of view that it is unfair for them to have to assume the entire burden for recoupment. Some corporations have already invested significant sums of money for development of a technology and DOE should provide some allowance for these investments. It was suggested that DOE reduce the percent of repayment or at least

delay implementation of repayment regulations until the vendors have recovered all or part of their investment. They felt that a successful program with its inherent economic and environmental advantages would be the real payoff to the public.

In any event, it was unanimously agreed that if recoupment (in whatever form) must be part of the solicitation, it should be kept as it was in the previous CCT PON, that is, not part of the evaluation or selection process.

4.2.2 Discussion Workshop Number 2

PUBLIC MEETING OF SEPTEMBER 3, 1987
ST. LOUIS, MISSOURI
Joseph P. Strakey, Chairman
Gary E. Voelker, Cochairman

There was a broad cross section of participants in Workshop 2, including representatives from coal and lime suppliers, state and federal government, utilities, universities, equipment suppliers and developers.

The initial discussions concerned the solicitation qualification criteria and the appropriate amount of time to prepare a proposal. Discussions emphasized that a considerable amount of time is needed and substantial costs are incurred in order to have final teaming arrangements through legally binding entities prior to selection. Detailed discussions were also conducted concerning site requirements (i.e., lease, options, etc.), and the necessity to have a site available prior to submission of a proposal.

Also, lengthy discussions were held concerning what evidence of financial commitments could be reasonably provided prior to being selected by DOE.

The consensus was that the CCT-1 Qualification Criteria were reasonable and appropriate for a 60-90 day proposal preparation period (preferred option). On the other hand, if the qualification criteria were more restrictive, then a significantly longer proposal preparation time would be required (six months to a year). A "phase zero" concept was discussed. Phase zero would begin after project selection and brief negotiations. It would be limited (in time and money) and would include some design and economic evaluation, and also permit the offeror to finalize his financial commitments and the specifics of his business arrangements. At the end of phase zero, if specified milestones have not been achieved, the entire project would be terminated. DOE and the offeror

could cost share in this phase. Discussion indicated that a phase zero approach could enhance the ability to get the projects under way. With regard to the overall timing of the solicitation, one participant emphasized the need to provide the evaluators with adequate time to evaluate the proposals.

The selection criteria to be used for ICCT were discussed. The applicability of the Lewis/Davis criteria and other criteria, including environmental and business factors (particularly financial), were discussed. It was recommended that more emphasis be placed on financial factors in ICCT, since the primary purpose of the program is to develop innovative clean coal technologies. It was emphasized that DOE should not discourage innovation. It was noted that, if we follow Lewis/Davis- type criteria, it would be difficult for the companies themselves to predict reductions in transboundary pollution. They preferred that DOE perform the calculations, and provide published information on the methodology that will be used to calculate transboundary reduction potential from existing sources. The participants felt that they were in the best position to estimate the economic potential of their process.

The discussions concerning recoupment concluded that recoupment and/or repayment from "profits" was a reasonable, appropriate concept; however, it was recommended that flexibility be provided in negotiation of the plan with respect to when the details of repayment are specified, when the payments are made, etc. Nevertheless, the government would eventually be repaid if profits resulted from the endeavor.

There was some discussion about the need for price guarantees for projects where coal would be competing with natural gas, recognizing that price savings for natural gas are likely to be greater than fluctuations in coal prices. One participant recommended that special consideration be given in cost sharing and recoupment provisions for such cases to reduce risk in the event of declining natural gas prices.

In-kind cost share provisions of CCT-1 were deemed acceptable by the participants. The participants discussed the merits of a different percentage cost share for retrofit vs. repowering projects. However, the cost sharing provisions in CCT-1 were

thought to be appropriate for ICCT because of the competitive nature of the program. The offeror should be expected to use his best judgment and make his best offer since a higher cost sharing percentage is likely to increase the likelihood of award, all else being equal.

4.3

The Third Public Meeting

FOUR DISCUSSION WORKSHOPS

PITTSBURGH, PENNSYLVANIA
SEPTEMBER 10, 1987

4.3.1 Discussion Workshop Number 1

PUBLIC MEETING OF SEPTEMBER 10, 1987
PITTSBURGH, PENNSYLVANIA

Joseph P. Strakey, Chairman
Richard R. Santore, Cochairman

The workshop included a broad cross section of interests in the Innovative Clean Coal Technology program, including representatives from several companies that had submitted proposals in response to the first Clean Coal Technology solicitation.

The initial discussions focused on the potential role of industrial projects in the ICCT program. Recognizing the purpose of the program proposed by the Administration and articulated by Assistant Secretary J. Allen Wampler and Deputy Assistant Secretary Jack Siegel in the opening plenary session, several attendees in the working group stressed that industrial participation could play an important role in developing the clean coal technologies that will ultimately result in reductions in transboundary transport of SO_2 and NO_x. It was felt that phased projects could be constructed that include testing at industrial sites. These sites can have utility type boilers in the 100 MWe or larger class, and may offer more flexibility for testing, with the ability to react more quickly than a utility which has as its primary concern reliability of power supply. This is especially true in the early phases of a project. The attendees hoped that the program would accommodate this role for industrial participation.

The utility representatives emphasized that such industrial projects should include the participation of a utility in the early phases so that the information appropriate for utility decision makers is collected. They also felt that ultimately, before multiple units are ordered for installation at utilities, a utility-based demonstration would be needed where process reliability could be evaluated in a utility setting.

In a discussion of the "select use of natural gas," one attendee expressed a view that the goal of emission reduction should be considered in its broadest sense, and then "select use" projects could contribute significantly, especially since they will be economically attractive.

Qualification criteria were discussed in relation to the time needed to formulate a project and prepare a proposal. The group generally felt that if the qualification criteria were the same as for the first Clean Coal Technology solicitation (CCT-1), then a 90-day proposal preparation period was reasonable. A fairly strong view emerged that 60 days was not enough. One attendee noted that when the difficulties being experienced in rapidly closing negotiations (14 months) are considered, allowing another 30 days at the "front end" will be a good investment of time with regard to getting the agreements signed more quickly.

If the qualification criteria are significantly tightened by requiring legally binding teaming arrangements to be in place when the proposal is submitted, or by requiring contractually binding "host site" agreements or more definite project financing, then the time needed to get a proposal ready increases dramatically. In this case, a period of six months is probably not enough. It could take over a year for a larger project. One attendee who was awarded a cooperative agreement under CCT-1 noted that it took five months to move from host site commitment letters from utilities to host site contracts, even though the utilities were not financially participating in the project.

Approaches were sought that could shorten the overall time from issuance of a solicitation to the beginning of construction of the demonstration. This discussion centered on the "phase zero" concept. Phase zero would be defined as a project development phase. Proposal requirements would be essentially the same as for CCT-1. After selection, a brief negotiation period (a few months) would bring the parties into phase zero of the cooperative agreement. The participant's financing and teaming arrangements would have to be firm for the phase zero portion. During this project development phase, the participant would finalize the project financing, teaming agreements and host site contracts for sub-

sequent phases 1, 2, and 3. He could do some limited design and costing work necessary to secure the project financing. He could also begin working on the National Environmental Policy Act (NEPA) requirements. DOE and the participant would cost share this phase at a predetermined ratio. There would be established milestones, especially with relation to project financing. If, at the completion of phase zero, the financing, team, and site arrangements were not in place, then deselection would occur.

This concept received strong endorsement from the attendees. In discussing the time and dollar limits for this phase, an estimate of 10-15% of the total project time and 3-5% of total project cost was offered by several attendees. Naturally, they suggested that they would like DOE cost participation during phase zero to be as high as possible.

With respect to phase zero milestones, a suggestion was offered that a Project Evaluation Plan be required as was the case for phases 1, 2, and 3 of CCT-1. The plan would be required 30 days after selection and include the milestones. After acceptance of the plan, it would be incorporated into the cooperative agreement. At the end of phase zero, the participant would submit a final evaluation report addressing his success (or lack of success) in meeting the objectives and mile stones of the plan and would also submit a continuation application for phase 1 work. At this point, DOE would make a "go" or "no-go" decision.

The attendees expressed the view that phase zero could help them considerably to secure the project financing and management commitment needed for a large project and would significantly accelerate the program.

In the event that a phase zero is not used, the attendees generally felt that negotiation milestones were desirable. They felt that some flexibility is needed for interim milestones. Missing these milestones could probably not be used for deselection and all projects would probably have to be carried until the final "drop dead" date when deselection would occur.

The group views on foreign involvement in the program were mixed. It was recognized that it would be difficult to define and exclude foreign technologies. One participant stressed

the need for jobs in the U.S. and felt that the demonstration should be located in the U.S. and use U.S.- mined coals and that the majority of the equipment should be fabricated in the U.S. A few participants suggested that performing one part of the demonstration outside the U.S. might serve U.S. interests since it can, in some instances, offer the cheapest and quickest way to test a certain technology, especially if there has been a lot of background testing in other countries. In this case, it could be cost effective for U.S. companies to "buy into" this information.

Recoupment (repayment) of the government's investment in the project provided a lively topic for discussion. There was general agreement that repayment of the government's investment in the project (without interest) from profits was a valid concept. However, the unique position of the regulated public utilities in this regard was highlighted. Even if the utility gets its portion of the project included in the rate base, it is virtually impossible to get the DOE portion included. Furthermore, the "prudence" issue threatens the inclusion of the utilities portion.

Various approaches to lessen the impact on the utility sector were discussed. It was felt that it would serve no useful purpose for the recoupment provisions to be waived by statute in the event that a utility made a good faith effort to include the entire project in the rate base, and the state PUC then denied it. The PUC would be fully aware of this provision, and its denial by the PUC would become a self-fulfilling prophesy. The attendees, especially those representing utility interests, felt that the best approach consistent with the national interest was to exempt utilities from recoupment. They did not feel that exemption from recoupment would be needed from the profits generated from the subsequent sale, lease, use or licensing of the technology. The attendees strongly stressed the need for DOE to clarify its approach to recoupment as soon as possible, since corporate executives are very concerned with this issue and must know the policy before they will commit to a project.

Possible evaluation criteria were discussed, especially the criteria suggested by the Special Envoys (Lewis/Davis) report. One attendee felt that it was especially important to recognize the potential contribution that a repowering project could

make toward both long-range reductions in emissions and to lower rates to the consumer resulting from increased electrical output from a unit.

On the subject of the proposal information requirements that would be needed to evaluate the Lewis/Davis criteria, the attendees noted that they (rather than DOE) were in the best position to supply the information on the economic potential of their project in dollars per ton of pollutant removed. DOE would have to clearly specify the assumptions to be made in the economic analysis. To estimate total potential reduction in transboundary transport, the attendees expressed concern that there was little agreement on the accuracy of various models for calculating long range transport. They noted the complication introduced due to economic dispatch which could place the retrofitted unit at the end of the dispatch order, resulting in both higher total costs and higher emissions. They felt that the utility could, if necessary, supply information on how economic dispatch would affect their system when new technologies are introduced.

4.3.2 Discussion Workshop Number 2

PUBLIC MEETING OF SEPTEMBER 10, 1987
PITTSBURGH, PENNSYLVANIA

C. Lowell Miller, Chairman
Paul R. Wieber, Cochairman

A. SOLICITATION PROCESS

Each of the various steps in the solicitation process, beginning with anticipated congressional guidance through the selection of the participants, was discussed. The positions taken on the major points were as follows:

1. General agreement was reached on the importance of having adequate time to prepare the proposal and on identifying procedures to make the selection process more responsive to the needs, as well as the resources, of the industrial participant:

   - Opinions expressed about the timing allowed for the preparation of proposals were unanimous in identifying 90 days as the minimum length of time required. It was generally believed that allowing more time for the preparation of proposals would actually result in shortening the overall process leading to the signing of the cooperative agreement.
   - There was little, if any, concern expressed about DOE making too much time available for the proposal preparation and evaluation process. The addition of one or two months to the process (i.e., 11 instead of 9 months) would significantly increase the quality of the proposals and would allow DOE to consider more imaginative approaches in structuring the Program Opportunity Notice (PON).

2. The concept of a two-phase selection process was presented as the most suitable approach to the proposal preparation and subsequent evaluation process:

   - The first phase would be a qualification step used to significantly reduce the number of potential participants to those with projects and capabilities that would have a good chance of becoming one of the finally selected industrial participants. Only those that qualified for the phase-two step would be asked to commit the corporate resources necessary to prepare a detailed proposal.
   - Two examples of the successful use of the two-phase selection process were suggested to the group for consideration, i.e., the procedures used by the State of Ohio's Coal Development Office and by DOE's Solar Energy Research Institute. It was observed that the size and nature of the projects being submitted to the Ohio Program were similar to those of interest to the ICCT Program.

3. The two-step process of responding to the ICCT solicitation would include the use of different criteria for each of the two phases of the selection process:

   - The qualification criteria used in the first phase should be made more restrictive. However, it was stressed that particular attention should be paid to the trade-off between the number and type of qualification criteria used and the amount of time and money that would be required for the industrial participant to respond.
   - These criteria should be sufficient to determine that the company is qualified and committed to the Program and that the technology is appropriate, has good market potential, and is developed to the point that it satisfies the requirement for pre-commercial capability. However, the qualification criteria should not be used to the degree that the potential participant is, in effect, being asked for two detailed proposals (e.g., a qualification proposal and a selection proposal).

The goal should be to have the principal costs of submitting a proposal paid by those potential participants that are competitive, that have projects closely matching the objectives of the procurement, and have a good chance of being selected.

- It was suggested that DOE might be able to originate a check-off list method of performing the proposal qualification step. The check-off list would consist of a number of focused questions that would either require a "yes" or "no" response or some intermediate procedure that would permit establishing a degree of responsiveness.
- In subsequent discussions of specific criteria that might be used by DOE to achieve its policy and environmental goals, a number of specific suggestions were proposed:
  - In evaluating the environmental merits of competing technologies, the use of dollars/ton of pollutant removed should not be considered as a suitable measurement.
  - The capability of the process/technology to remove both SO_2 and NO_x should be considered.
  - Such criteria as international competitiveness, expanded use of coal, economic impact, etc., should be considered.
  - Some criterion that measures the degree to which the project contributes to U.S. energy security should be considered. It was observed that U.S. energy security is as important as the reduction of acid rain. Factors should be included that implement some of the recommendations presented in the recent DOE report on energy security (e.g., the contribution that the proposed technology will make to providing needed energy supplies in 1995, 2000).
  - While the focus of this solicitation is on retrofit technologies, criteria should not prohibit the submission and equal consideration of technologies for new or "grass roots" applications.
  - Criteria should be used that ensure equal consideration for industrial projects.
  - The DOE should clearly define the information needed for, or describe in detail how they will evaluate, the comparative technical and economic merits of the process or technology.
  - The criteria should implement the idea that this is a demonstration program for the development of innovative

technologies to solve the problem of acid rain in the future, and not a means by which to achieve immediate reductions in transboundary transport of pollutants.

B. NEGOTIATION PROCESS

Attention was focused on many of the issues that have delayed negotiation of the projects in the first solicitation. Comments included:

1. The issue of cost sharing generated considerable discussion and was considered by all the attendees as the feature of the Program that has the most impact on the potential industrial participants' decision-making process, and their ability to put together a suitable proposal and be responsive to the negotiation process. While it was conceded that the 50/50 government/industry cost sharing concept would be a requirement, a number of specific suggestions were made:

   - The cost sharing feature is most difficult for small companies with very limited resources, such that some accommodation should be considered.
   - Cost sharing should incorporate the concept of a sliding scale or variable percentages for the industrial participant and DOE that could recognize size of company, degree of risk involved, type of technology, application, etc.
   - The concept of 50/50 cost sharing in each of the phases of the project should be reevaluated, with the goal being to permit varying percentages of cost sharing for the individual project phases while achieving a 50/50 cost sharing goal for the overall project.
   - Some thought should be given to establishing a method for allowing previous research and development expenses to be considered as a component of cost sharing. In exchange for such consideration, the Government might negotiate greater rights in data and/or patents (e.g., background patents).

- The general idea was endorsed of greater flexibility in what is permitted as allowable contributions toward cost sharing.

2. The process of negotiation and how best to proceed in order to reach mutual objectives in the most efficient manner were considered at length:

   - The concept of using milestones as a measure of progress in moving from project selection to signing of the cooperative agreement was considered to be a good idea. However, the conditions under which negotiations would be terminated should be clearly defined in the PON. Endorsement was given to this milestone approach, but it was emphasized that DOE's intent should be described in the solicitation document.

   - The conditional commitment concept was also raised in conjunction with the idea of allowable pre-award costs. It was a general opinion that introducing pre-award costs as an allowable expense during the fact-finding and/or project formulation stage would significantly increase the speed of the negotiation process through an increase in the amount and quality of data made available to DOE in the early stages of negotiation.

3. The idea of incentives being made available by individual state PUC's was discussed and the following positions were stated:

   - It was agreed that DOE should not give favorable treatment to projects that may have other incentives provided to it by a state PUC. The idea of DOE keeping the "playing field level" in its qualification and evaluation criteria was considered essential.

   - It was observed that not only does DOE have no control of the State PUC's and their ability to modify and change proposed incentives at any time, even the boards of many state PUC's do not have that control. It was noted that the action of any previous board may not be binding upon the incumbent board.

   - It was a majority opinion that DOE should look for other ways to provide incentives to get utilities to participate.

C. REPAYMENT PROCEDURES

The discussions of repayment clearly reflected the differences in attitudes on the parts of the representatives of industry and the utilities:

1. While it was recognized that the electric utilities are a regulated industry with specific problems when required to repay the Government contribution, the representatives of equipment suppliers noted the need to guard against the utilities and/or DOE shifting the repayment burden solely to them. Representatives of industry noted the need to treat all participants equally and to look for imaginative, more flexible, ways to generate funds acceptable to the DOE repayment provisions.

2. An idea was proposed that would couple the cost sharing provisions to the repayment provisions in which the use of an irrevocable letter of credit was envisioned. This letter of credit would permit the funding to vary in each project phase according to the participant's ability to provide the funds, but it would commit him to the 50/50 obligation for overall costs.

3. The use or application of any revenues generated during the project should be left solely to the decision of the industrial participant with regard to repayment of the Government's funds. The attendees from the utility sector stressed the importance of the utility being able to continue to use the facility after the operational phase of the project without having to consider the revenues generated as a source of repayment funds.

4.3.3 Discussion Workshop Number 3

PUBLIC MEETING OF SEPTEMBER 10, 1987
PITTSBURGH, PENNSYLVANIA

Gary E. Voelker, Chairman
Jerry Pell, Cochairman

The following disussion summarizes the issues and concerns that were discussed in the workshop, in chronological order. For each subject, a brief overview is provided of the audience's comments and opinions, followed, where applicable, by the majority or consensus recommendation to the Department of Energy. The workshop chairman initiated the dialogue by reviewing the five subjects of particular interest that were presented in the Federal Register notice of the public meetings, and then went on to consider the additional issues and concerns that arose in the prior public meetings and those that were introduced by attendees at the workshop.

Qualification Criteria:

Would it be useful to adopt more stringent qualification criteria, whereby proposals could be "screened" early in the evaluation process, with the weaker proposals removed from further consideration, i.e., not allowed to continue to comprehensive evaluation? There was much discussion about site availability, and the degree of commitment that should be required, with many expressing the view that a letter of intent would be more appropriate than a legally binding agreement. However, it was acknowledged that the identification of the site was an important consideration in the evaluation process, in the sense that the quality of the proposal may be closely related to the site characteristics.

RECOMMENDATION: For site availability, a letter of intent is an adequate qualification requirement.

It was generally felt that teaming arrangements were time consuming to consummate, and should not be required in the form of firm legal entities for purposes of qualification. Additionally, the previous requirement for certification of at least 50% cost sharing in each project phase was viewed as an adequate qualification criterion. As discussed below, there was a great deal of discussion on financing, and agreement was reached that a qualification requirement of evidence of firm financing would be overly burdensome.

> **RECOMMENDATION:** In general, the qualification criteria used in the earlier solicitation (Program Opportunity Notice [PON] of February 17, 1986) are reasonable and adequate. In particular, establish "hard" requirements for evidence of financing, etc., as part of the evaluation process (see below), but not as a qualification criterion.

Two-Phase Solicitation:

A great deal of discussion ensued on the subject of the solicitation structure itself, in terms of whether a two-phase solicitation would be preferable to the standard single-proposal approach. In a two-phase approach, offerors would be requested to submit a preproposal, on the basis of which candidates would be evaluated and screened; only those projects deemed adequate (based on as-yet unidentified criteria) would be invited to submit the second-phase proposals for comprehensive evaluation leading to ultimate selections for awards. Some members of the audience felt that the phased solicitation approach used by the State of Ohio was desirable, and that offerors could save significant preparation costs by this approach. It was noted, however, that Ohio has been requiring 3-4 months for the first phase process.

An additional aspect of interest was the point that electric utilities are receiving large numbers of requests from equipment vendors, etc., for access to their plants as demonstration project sites, and that they were having some difficulty with judging the prospects. If a two-phase approach were employed, then proposals rejected in the first phase would "free up" sites for phase-two offerors' consideration.

With regard to the contents of a potential first-phase submittal, some thoughts were offered that included a detailed technical description of the proposed technology, and an outline of the plan for securing project financing (offeror's cost share); additionally, some basic environmental information would be appropriate.

Consideration of the possible timing of a two-phase approach brought forth the view of a number of attendees that proposal preparation is already underway among the more serious offerors; interested parties are not waiting for the actual solicitation in order to commence planning, etc.

RECOMMENDATION: At least in principle, the two-phase solicitation approach is preferable, for the offerors, compared to the standard single-proposal approach. The following time frame appears reasonable and appropriate:

- Issuance of solicitation: 60 days after legislation enacted.
- Preparation/submittal of phase-one proposal: 30 days after solicitation.
- DOE evaluation and response to offerors: 30 days after proposals received.
- Preparation/submittal of phase-two proposal: 60 days after DOE notification.
- DOE evaluation and selection of successful proposals: 90 days after proposals received.
- Total time elapsed: 270 days from legislation to selection.

Notes:

– In a two-phase approach, the preproposal conference should be scheduled during the preparation period for the second-phase proposals (between the 121st and 180th days).

– The Lewis/Davis criteria are probably appropriate for use in the process of screening the phase-one proposals, i.e., as (one of the) criteria for proposal rejection/ acceptance.

Evaluation Criteria:

Evaluation criteria were major subjects of discussion, with a number of views expressed on a diversity of aspects. Innova-

tion was stated as a criterion that should be of significant importance. Marketability was also noted to be an important criterion, and one that would help to ensure that a few expensive projects would not consume all of the available funds to the detriment of smaller projects; presumably, the more expensive technologies would be applicable to fewer plants, thereby scoring lower on commercialization potential, as opposed to less expensive technologies with widespread applicability. However, the difficulty of assessing marketability was noted.

An important evaluation criterion to emphasize -- more than was done in the previous PON -- is project financing, according to the attendees. However, the group stressed that financing could be confirmed by formal agreements much more readily subsequent to proposal selection by DOE than as part of proposal preparation. Accordingly, the group felt that firm financial commitments should not be required in time for execution of cooperative agreements, but rather during some short period (not defined) thereafter. However, offerors should be required to clearly indicate how they propose to obtain financial commitments, and how the financial package will be "retired," including the prospective revenue stream for the project. In terms of formal proposal evaluation (scoring), there was general agreement that the financing aspects should be given about equal weight as the technical proposal.

The attendees were in agreement that the solicitation should provide for projects to be deselected at some fixed interval after initial proposal selection if negotiations leading to cooperative agreements were not proceeding satisfactorily; they emphasized that inadequate progress toward obtaining financing was an eminently appropriate basis for deselection. A reasonable "go/no-go" point after selection was 90 days, many attendees believed. Items to measure would include revenue stream provisions, financial plans, and letters of intent. Furthermore, the Innovative Control Technology Advisory Panel (ICTAP) should be expanded to include members with specific expertise in finance.

The Lewis/Davis criteria were discussed, and some concern was expressed that absolute adherence could result in the exclusion from the solicitation of a number of good projects. The solicitation should accommodate, according to the atten-

dees, both retrofit projects and new "greenfield" projects as long as the technology is applicable to existing facilities. Additionally, it was felt that other applications, additional to electric utilities, were legitimate and appropriate for the solicitation, including synthetic fuels from coal, and industrial projects if it could be shown that they would eventually result in reduced emissions. Additionally, projects at western sites should be considered on the basis of the applicability of the technologies, rather than directly on their compliance with some of the acid rain-related criteria.

Finally, a number of the attendees felt that the cost-effectiveness in terms of pollution abatement capability of the technology, and the marketability, should be determined and presented by the offerors as parts of their proposals, based on the guidance provided by DOE in the solicitation (assumptions, projections, etc.), and that sufficient documentation should be provided to allow DOE to evaluate the merits of the proposals' claims.

RECOMMENDATIONS: Stress technical innovation and marketability of the demonstrated technology as important evaluation criteria.

Enhance financing as an evaluation criterion to weigh it about equal in importance to the technical aspects of the project.

The solicitation should provide for proposal deselection if negotiations do not proceed at a satisfactory pace subsequent to selection by DOE. An especially valid basis for deselection would be lack of progress toward obtaining project financing; also important would be the execution of teaming arrangements, if any.

The Secretary of Energy, through ICTAP or otherwise, should have the benefit of quality financial expert advice, in addition to technical advice.

The Lewis/Davis criteria should be implemented cautiously in order to avoid precluding consideration of meritorious projects, including industrial (non-electric utility) projects and synthetic fuels production. The solicitation should, as in the previous PON, emphasize program policy factors that ensure a diversity of applications, technologies, and

locations. This should include projects that are applicable to reductions of sulfur dioxide and oxides of nitrogen, including technologies that would produce coal-derived transportation fuels with the potential of reducing oxides of nitrogen emissions from mobile sources (automobiles, etc.).

Marketability of proposed technologies, and their ability to comply with criteria such as the cost-effectiveness of pollutant removal, should be presented by the offerors as part of their proposals (and evaluated by DOE based on proposal documentation). However, detailed environmental data and analyses should be required not as part of the proposals, but, rather, subsequent to selection by DOE.

Cost Sharing:

Some of the attendees were concerned that Government 50% cost sharing might not be adequate to support flue gas cleanup projects because of the absence of certainty of market demand and the risk associated with the project. Accordingly, the availability of financing support for such projects might be scarce.

RECOMMENDATION: Consider greater incentive for flue gas cleanup projects by increasing DOE cost sharing to exceed 50%.

Proposal Preparation Time:

Most of the discussion on this subject focused on a two-phase solicitation approach, as discussed earlier. However, if a single solicitation were issued, the attendees stressed that at least 90 days should be afforded to proposal preparation and submittal.

RECOMMENDATION: For a conventional (single proposal) solicitation, allow at least 90 days for proposal preparation.

NEPA Requirements:

The attendees seemed to agree that the National Environmental Policy Act (NEPA) requirements (i.e., "NEPA Strategy")

of the previous PON were reasonable and appropriate. However, they agreed that detailed environmental information should be requested post-selection because of the difficulty associated with the gathering of data.

> **RECOMMENDATION:** Require detailed environmental data and analyses for purposes of satisfying NEPA needs after selection of the proposal by DOE, rather than in the initial proposal.

Regulatory Incentives:

A great deal of concern was expressed with regard to favoring projects in states that offered regulatory incentives, because of the inability of the offerors to influence such considerations or, in some cases, to gauge the nature and degree of such incentives, or lack thereof, in states that they may wish to consider for project sites. Other concerns expressed were that there are only a limited number of appropriate (retrofittable) sites in the first place, and that incentives considerations would serve only to reduce that number further, that states located primarily in the northeastern part of the country, that may offer such incentives, are the states that least need additional electric power, and that offerors cannot predict in advance how a state utility commission may react to a future project with regard to agreeing to provide such regulatory incentives. Also, much concern was expressed about how such a consideration would affect or be applicable to industrial projects.

> **RECOMMENDATION:** The solicitation should not favor projects located in states that offer regulatory incentives to clean coal technologies.

Recoupment:

The attendees agreed that recoupment of the Government's cost share, from future profits upon conclusion of the demonstration projects, is reasonable and appropriate. However, electric utilities, because of their regulated nature, should not be required to reimburse the Government from continued operation of the demonstration projects. However, subsequent commercialization of the technology would be an appropriate source of revenue from which to reimburse the Government.

RECOMMENDATION: Provide for recovery of the Government's cost share from projects that are successful, but reimbursement should derive from profits subsequent to the DOE-supported demonstration projects. For regulated electric utilities, reimbursement should not be required from continued operation of the project beyond completion of the demonstration. Finally, the recoupment plan should permit flexibility of terms, payback schedule, etc.

4.3.4 Discussion Workshop Number 4

PUBLIC MEETING OF SEPTEMBER 10, 1987
PITTSBURGH, PENNSYLVANIA

Howard Feibus, Chairman
George G. Weth, Cochairman

This workshop included a good mix of electric power companies and vendors who were able to portray the viewpoint of both the technology user and supplier for the utility sector.

The initial discussion focused on qualification criteria. There was general agreement that the criteria should be revisited by DOE to ensure that only those proposals that are ready and able for demonstration are accepted for formal evaluation. However, the criteria for financial commitments should be limited to letters of intent and an overall financial plan. There were several concerns to support this position: (a) this would impose problems for small companies; (b) this may eliminate state participation in projects, as they need time to fully evaluate their status when DOE announces selection; (c) due to the complexity of large projects and time allotted for proposals, only letters of commitment could be obtained; and (d) final financial commitment by participants and investors will be predicated on DOE's selections for negotiations and award. There was a unanimous plea from the participants to allow a minimum of 90 days for the preparation and submission of their proposals. Some of the utility panel members mentioned that the decisions to participate, with whom to participate, and which site to select, are complex and time consuming.

The subject of proposal preparation time led to a discussion of variations of a phased solicitation process. The simplest would be a two-step process by allowing 30 days to respond to the qualification process, and, once projects are qualified ("short-listed"), allow an additional 60 days for "best and finals." This may allow some to strengthen financial commit-

ments, as investors would have more confidence of success. Another suggested variation on this was that, once having completed the formal evaluation, DOE should award contracts on a "first come, first served" basis. This would put a sense of urgency on those competing to fulfill all procurement requirements necessary for negotiation and award. It was generally agreed that if the selection and award process were to be similar to the initial clean coal solicitation, then DOE should consider a phase after selection which would allow for some form of cost sharing for pre-award costs and be limited by definite milestones and schedules, i.e., a conditional commitment.

There was a recommendation, by one of the successful participants in the initial solicitation for clean coal demonstration, to streamline the pre-negotiation process, thus save the project valuable time, as well as saving the participant the expenditure of funds which are not recoverable. The participant strongly suggested that the PON should clearly identify technical requirements for evaluation and award and should also be structured to clearly identify the procurement requirements necessary for award.

Several of the members in this workshop agreed that the 50/50 cost share on a phase-by-phase basis was a burden and that it would be easier to attract team members if the 50/50 cost share were on the overall project. However, the group was not able to suggest an equitable 50/50 cost share arrangement if the project were terminated after the design or construction phase. This precipitated a discussion on recoupment/ repayment based on net revenues from continued operation of the demonstration plant, especially for retrofits specifically designed for emission reduction, but not necessarily for reboilering and modernization aspects. A utility representative said that a drawback to repayment is that it results in the loss of potential participants. He mentioned that his company, in particular, decided not to participate in the first CCT solicitation specifically because of the repayment provision. The manufacturers and technology suppliers commented that repayment by individual participants may be unfair and that the general public would be the overall winner from a successful program with a cleaner environment, increased number of jobs, and lower cost electricity. They also

noted that the Government is already taxing their profits and, if they benefit from increased profits, so would the Government. However, they agreed in principle with repayment if the success of the project were to give them a competitive edge in the market.

It was agreed that Lewis/Davis guidelines were valid criteria for this solicitation. If projects were selected that were located in the western U.S., it should be required to test eastern and/or midwestern coal sometime in the operating phase of the demonstration project. It was recommended that the projects must be at or near commercial size; plants smaller than 50 MW could not be considered as appropriate for scaleup to a commercial plant. One utility suggested that DOE should not limit consideration on the basis of size, but consider maturity of the technology to be demonstrated. There was concern on the part of several members of this panel that DOE should ensure that all technologies with application to Lewis/Davis guidelines will be evaluated on an equal basis. It was mentioned that DOE should be aware that utilities feel that coal cleaning projects are as important as post-combustion projects. In addition, there are side benefits such as lower transportation costs, improved boiler performance, and so forth. One participant felt that DOE should keep the program open to all coal burning sources and not just coal burning electric power plants. There are many sources of SO_2 emissions from burning coal waste piles or underground coal mines.

DOE was encouraged not to limit the program to domestic companies and technologies but, as in the Clean Coal Technology Program's first solicitation, rather to restrict demonstration projects to U.S. coals located at U.S. sites. It was also requested that DOE keep the solicitation open to industrial projects that are consistent with Lewis/ Davis criteria.

Finally, it was agreed that it was in the best interest of the program to allow the participants to retain all patent data rights and that DOE should search for mechanisms to waive rights at the time of signing the cooperative agreement.

4.4

The Fourth Public Meeting

THREE DISCUSSION WORKSHOPS

WASHINGTON, D.C.
SEPTEMBER 22, 1987

4.4.1 Discussion Workshop Number 1

PUBLIC MEETING OF SEPTEMBER 22, 1987
WASHINGTON, D.C.

Joseph P. Strakey, Chairman
Paul R. Weiber, Cochairman

The attendees at this session reflected a broad cross section of interests, and presented a wide diversity of views on numerous aspects of the forthcoming ICCT solicitation.

Various approaches were discussed both to speed up the overall process from the time the solicitation is issued until the beginning of construction, and to quickly eliminate weak proposals. It was generally felt that there was little value to more stringent criteria than those used for the last Clean Coal Technology solicitation. Requiring the actual formation of a legal entity to perform the project rather than accepting just a letter of intent was considered impractical unless the time for proposal preparation was greatly extended beyond 90 days. Some attendees supported a view that flexibility was needed for switching potential team members, especially since the developmental status of the technologies entailed higher risks than normally encountered for commercial projects. Requiring contracts between the entity and the host site rather than commitment letters at proposal time was also considered to be unrealistic. The attendees discussed some of the difficult problems encountered in securing commitments from the site hosts for the first solicitation. Completing the commitments or agreements for the site, the team, and especially the project financing, were noted to be very difficult tasks for utilities to accomplish.

Most of the session attendees felt that there were few incentives for utility involvement in CCT-1. It was noted, however, that CCT-1 did have a significant number of utilities involved in project proposals in various capacities in spite of the im-

pediments. Most attendees felt that waiver of the repayment provisions for regulated utilities would remove a major barrier to their participation.

A two step approach for proposal solicitation was discussed, whereby preliminary proposals would be evaluated and a "short list" would be developed. Those on the short list would then be asked to submit a detailed proposal for evaluation. The attendees generally recognized that this approach could reduce their costs for proposal preparation through early elimination of those proposals that did not have much chance for selection.

A "phase zero" concept was also discussed. In this approach, the proposal requirements would be similar to CCT-1. After selection, a brief negotiation period would ensue to bring the participant into phase zero of the cooperative agreement. During this phase, the participant would finalize the financial, site, and teaming arrangements for the project and DOE would share some of the costs. Phase zero would be for a limited time period and would have a cost cap. Milestones would be established for phase zero during negotiations, especially financial milestones. At the end of this phase, the project would be terminated if the milestones were not achieved. This concept received a favorable reaction from the group. They noted that it increased the probability of success on the capital market and that it would save time overall. Having a firm commitment from DOE, as indicated by the beginning of phase zero, was recognized to be beneficial to securing firm financial commitments from potential private bankers.

Qualification criteria concerning the location of the demonstration site, the use of U.S. coals, and participation by foreign entities were discussed. The CCT-1 qualification criteria restricted the location of the demonstration to the U.S. and required the use of U.S.-mined coal. Many of the attendees supported this approach and emphasized that program support is provided by U.S. taxpayers and that it was politically untenable to site the demonstration plant in other countries or to test non-U.S. coals. A few attendees felt that accomplishing part of the demonstration outside the U.S. could be beneficial. Considering the nature of the program, some felt that the possibility of a Canadian site, especially if

jointly funded by the U.S. and Canada, should receive consideration. On the use of foreign technologies in the program, many of the attendees noted that it was nearly impossible to define the term, considering broad international involvement in most business structures and in technology development. One person felt that we should not spend U.S. dollars to support development of foreign technologies.

The potential role for a project which is located in the west was also considered. It was noted that reduction of transboundary transport of pollutants would result primarily from successful commercialization of the technologies in the retrofit boiler population of the midwest and east. If, then, evaluation criteria patterned after the recommendations in the Lewis/Davis report are used, and satisfied by demonstration projects located in the west, such projects should not be excluded.

The desirability of various potential evaluation criteria and program policy factors was discussed. Many recognized a need for more emphasis on the financial factors and cited problems that some of the selected CCT-1 projects encountered in securing the firm financing needed before award. A suggestion was made to assign equal weight to financial and technical factors. It was noted that the presence of financial backers for the project is also an indication of a sound technical process. Therefore, equal weighting ensures selection of strong and innovative technologies. There was also some recognition from the attendees that too much weight on the financial factors favors more conservative, low risk, projects rather than higher risk, innovative, approaches.

A discussion of Lewis/Davis-type criteria led to discussion of the question of the possible role of projects not primarily targeted toward reductions of SO_2 and NO_x. Several felt that a Lewis/Davis emphasis would discourage many projects that could offer other important incentives in the areas of economic development and energy security, and could offer cheap, clean options for industries that are especially concerned about fuel flexibility. It was suggested that a part of the program could be delineated for this purpose and be more closely aligned with the purposes of CCT-1. This part

would emphasize development of an expanded market for medium- and high-sulfur coals and development of alternative fuels providing fuel flexibility.

The question was posed of whether extra credit should be given to projects in states offering regulatory incentives. One participant in the session pointed out that there are built-in incentives for projects located in those states since they can more easily receive backing from utilities. Others felt that including special evaluation or program policy credits for projects in these states was not fair to the proposers who could not control this factor.

Repayment (recoupment) and cost sharing considerations were discussed along with the risks encountered by utilities by participating in the program. Utility representatives indicated that the CCT-1 program discouraged participation for several reasons. First, it is unlikely that they will be able to recover the DOE costs as part of the rate base. The utility portion may be disallowed as imprudent if high risk technologies are involved or if they don't come "on line." Furthermore, there is significant risk in providing a boiler for testing since the testing of an innovative technology could lead to problems resulting in taking the boiler "off line" for possibly costly repairs and perhaps the purchase of power from other sources. Utilities felt that DOE shared costs and profits but not much of the risk. The participants felt that if the utilities were not required to repay the DOE portion from profits, then they would have considerably more incentive to participate. One suggestion for encouraging utility participation included allowing cost share credit for supplying a facility or boiler even though the boiler may be fully depreciated, since it is providing useful power and loss of the boiler would entail penalty to the utility. Another suggestion was made for DOE to increase its cost share in the construction phase while the utility would provide a correspondingly greater portion during the operating phase. Another suggestion was made to essentially provide price supports for power from technologies being demonstrated to protect the utility from losses if the cost of electricity exceeds the estimates.

The National Environmental Policy Act (NEPA) requirements for CCT-1 were reviewed and discussed. It was noted that the sampling and analyses required by the Environmental

Monitoring Plan specified in CCT-1 duplicated, and in some cases exceeded, the monitoring required for the permits needed for the plant. One participant felt that this monitoring would only encourage new and undesirable environmental regulations. Others felt that it would be prudent to collect these data while the plant was operating to ensure that it was available for future commercialization. Several participants felt that this decision could best be made by the proposers, since they made similar decisions on what technical data to collect every day. The approach to collecting the technical, economic, and environmental data was an evaluation criterion in CCT-1.

Concerning milestones in negotiations, it was generally felt that milestones were necessary and that it was important to speed the negotiation process for the ICCT program. An estimate of 9-10 months for negotiation was offered by a few of the attendees as reasonable for projects of moderate to large size.

4.4.2 Discussion Workshop Number 2

PUBLIC MEETING OF SEPTEMBER 22, 1987
WASHINGTON, D.C.

C. Lowell Miller, Chairman
Richard R. Santore, Cochairman

SOLICITATION PROCESS:

As in the earlier three meetings, the discussions focused on a number of key issues. The principal ideas or concepts that emerged included:

1. The length of time that ought to be given to the proposers to respond was discussed. It was concluded that the quality of the proposal will be directly dependent on the time available:

   - The most suitable time period for proposal preparation was believed to be 90 days.
   - Some concerns were expressed about lengthening the time for proposal preparation to 120 days. There was general agreement that the overall length of the solicitation process should be closer to the nine months specified in the proposed House of Representatives appropriations language (i.e., two months PON preparation, three months proposal preparation, four months proposal evaluation) rather than be extended to an 11 month process (i.e., additions of one month for proposal preparation and one month for proposal evaluation).

2. Considerable discussion ensued on the interrelated concepts of qualification criteria and a two-phase solicitation:

   - In sharp contrast to earlier discussions, there was strong support given to the single-step solicitation

process. The support came after a long discussion about qualification criteria, during which it was generally concluded that there were few general or specific criteria that could be used that would accomplish the goal of DOE (i.e., to substantially reduce the overall number of submitters to those comparatively few proposing projects of the type specifically meeting the objectives of the solicitation).

- It was also observed that a two-step solicitation would not, in effect, reduce the overall proposal preparation costs for the industrial participant. Each proposer would be anticipating being one of those selected for the second phase and would continue to prepare accordingly while waiting for the final selection to be made. Most of the material the industrial participant could anticipate that DOE would require in the second phase would be acquired in the preparation process.
- It was pointed out that if the time for the overall proposal preparation process were to remain fixed, the two-step process might actually work to the disadvantage of the proposer. At some point in the proposal preparation process (e.g., 30 days after release of the PON), DOE would have to take time to evaluate the Phase 1 submission, make a selection, and request proposals from those qualifying. This selection period would represent time lost to the industrial participant.
- The members of the group supporting the longer period (i.e., 120 days) for proposal negotiation emphasized the increased quality that could be achieved in the cost estimates. The accuracy of these estimates could be dropped from plus or minus 30 percent for the 90-day proposal to somewhere around plus or minus 10 percent for the 120-day period of proposal preparation.

3. The problem of ensuring equal consideration for the proposed industrial project as compared to the utility project was discussed at length. This discussion elaborated on the impact that the Lewis/Davis report criteria would have in influencing any decision:

- The question of what benefits industry would bring to a program obviously oriented to acid rain issues was discussed. The participants responded that there was an essential need to increase the use of coal by many large industrial complexes. If this goal of providing alternative sources of energy were to be realized, any concept they were to propose that reduces the amount of emissions contributes as much as if the coal were burned by a utility.
- The problem of being able to establish qualification criteria that would provide equal treatment of industrial as well as utility projects in the selection process was recognized. The concept of setting aside a certain percentage of the funds specifically for industrial projects was discussed and generally endorsed.

NEGOTIATION PHASE:

The discussion of the many elements included in the negotiation phase contributed a number of concepts or statements of position not previously expressed, including:

1. The idea of receiving some consideration for previously expended research and development funds as part of the contribution to cost sharing was generally endorsed:
   - However, the difficulty of arriving at the proper set of criteria that could be used to identify just what amount of the R&D funds should qualify was recognized.
   - Most industrial participants believed that the bookkeeping methods employed by companies would prove to be an adequate basis for such determinations.
2. The milestone concept of measuring performance, and/or as a means of keeping the negotiation process moving, was unanimously accepted:
   - While the use of intermediate key milestones was considered a good idea as a way to measure progress, it was concluded by all that there should only be one milestone, i.e., the one that would identify the time for a decision to continue or cease negotiations.

- All agreed that there should be a fixed time interval for the attempt to arrive at a negotiated contract. At some date, mutually established by DOE and the industrial participant, the parties would agree to discontinue their efforts if the cooperative agreement were not consummated.

3. The idea of DOE having a single selection list (i.e., no "b" list of alternate candidates) was introduced and favored:

   - There was general agreement that no one wanted to be on the "b" list.
   - The alternative proposed was to use the funds that had been set aside, for any cooperative agreement not successfully concluded, for a subsequent solicitation.

4. Flexibility was stressed as the operative word in determining what resources a company might use to complete its cost sharing obligation. However, there was general recognition of the need for the Government to ensure that the cost sharing proposed was real and not imaginative bookkeeping.

5. A lengthy discussion occurred about the role of the public utility commission in assisting the participant in achieving his cost sharing responsibilities:

   - There was general agreement that the public utility commission was a "player" in the area of utility-based projects and could be a determining factor. However, there were a number of questions about the ability of a public utility to provide cost sharing "up front."
   - There was concern expressed by all participants about the participation of some state public utilities through any of a number of incentives, and its impact on the overall concept of equal treatment to all proposers. It was generally concluded that, since all state PUCs would not provide the same incentives, any incentive offered should not be considered by DOE in the selection process.
   - The issues of avoided costs and lowest dispatch cost were the subjects of much discussion. These concepts also were included in a discussion of the rate payer in a

local system paying more than the usual avoided costs to support the development of a new concept that would, when commercialized, be applicable to all utilities. There was general agreement with the view expressed in earlier sessions that "the rate payer should be held harmless (financially neutral) in these projects."

6. For the first time, the idea of allowing pre-award costs to be cost shared was not unanimously endorsed:

   - The opinion was expressed by some that the allowance of pre-award costs may be counterproductive to the goals of DOE. The industrial participant that is presenting a good project, with a high potential for success, in most cases has sufficient resources to provide DOE with all the information it needs. By contrast, it was suggested that the availability of pre-award funds may serve to keep marginal projects alive.
   - It was observed in general that the issue of pre-award costs is associated with the ability of small businesses with limited resources to compete with large businesses.

RECOUPMENT PROCESS:

Although the repayment issue was discussed with enthusiasm equal to that of earlier sessions, the focus was considerably different, with a number of new ideas introduced:

1. The concept of DOE requiring the cost of money to be considered as a feature of repayment was unanimously opposed:

   - While the idea of the Government seeking to get its money returned was considered by all as good business practice, the idea of the Government seeking some rate of return on its money was considered not to be a proper role of the Government in development projects.
   - If the Government were to require the repayment of its funds plus interest, it would dramatically change its role in the development project and, rather than equally sharing the risk, it would be transferring a much greater share of the risk to the industrial participant.

- A number of participants voiced the opinion that any requirement for the industrial participant to have to pay interest on the Government funds would dramatically reduce the number of interested participants and would eliminate the lower as well as the higher risk projects.

2. The idea of using some criteria that would identify and correlate a project risk element with the repayment requirement was discussed:

   - The role of the Government in accepting the development costs should be greater in the projects with higher risk than in those projects with low risk.
   - The concept of a sliding scale on the repayment obligation, i.e., as some function of the degree of risk associated with the project, was believed to be worth considering.

3. The timing associated with the preparation and approval of the repayment plan was discussed as it might affect the quality of the plan and the distribution of the sources from which the repayment funds could be expected:

   - There was little support given to the idea of a conditional commitment in which the repayment obligation would be accepted at the time of signing the cooperative agreement but with the final definition of the plan (sources and amounts) to be identified at the conclusion of the project when the repayment is to start.
   - It was believed that there was little or no advantage, either to the Government or to the industrial participant, from delaying the finalization of the repayment plan. Waiting until the end of the project to finalize the plan was not considered to be a practical means of getting a more realistic plan.

4. The idea of the industrial participant setting a cap on the Government's cost in exchange for a reduction in its repayment obligation was generally accepted as an excellent idea:

- The concept of the cap on the Government's cost should be clearly defined as an option in the PON so that all parties could consider it up front during the project formulation stages.
- The Government, in planning the terms and conditions of the PON, should explore other variations of the idea embodied in the "cap on the Government's investment." There might be several other ways the Government could provide relief from the required repayment by way of a trade for some other consideration of equal benefit to the Government.

4.4.3 Discussion Workshop Number 3

PUBLIC MEETING OF SEPTEMBER 22, 1987
WASHINGTON, D.C.

Gary E. Voelker, Chairman
Howard Feibus, Cochairman

The following discussion summarizes the issues and concerns that were discussed in the workshop, in chronological order. For each subject, a brief overview is provided of the audience's comments and opinions, followed, where applicable, by recommendations made to the Department of Energy. The dialogue was initiated by reviewing the subjects of particular interest that were presented in the Federal Register notice of the public meetings, and then went on to consider the additional issues and concerns that arose in the prior public meetings and those that were introduced by attendees at the workshop.

Qualification Criteria:

Would it be useful to adopt more stringent qualification criteria, whereby proposals could be "screened" early in the evaluation process, with the weaker proposals removed from further consideration? It was generally felt that teaming arrangements and final financing arrangements were time consuming to consummate, and should not be required in the form of firm legal entities for purposes of qualification. Additionally, the previous requirement for certification of at least 50% cost sharing in each project phase was viewed as an adequate qualification criterion.

> **RECOMMENDATION:** In general, the qualification criteria used in the earlier solicitation are reasonable and adequate. It was recommended that "hard" requirements for evidence of financing be made a milestone in the negotiation process, but not a qualification criterion.

Two-Phase Solicitation:

A great deal of discussion ensued on the subject of the solicitation structure itself, in terms of whether a two-phase solicitation would be preferable to the single proposal approach. Two different phased approaches were discussed. In the first option, the DOE would first review for qualification. Those proposals which were qualified would be subjected to a comprehensive review, and selections for negotiation would be made such that the total awards would exceed the funding available. At the end of a cost shared first phase, the number of projects would be reduced by further evaluation. This approach was strongly discouraged. In the second option, proposals would be selected for negotiation with award values equal to the allocated funding, and the pre-award costs would be cost shared if the negotiations were successful. It was noted that this wasn't really a phased approach, but was the same as the Clean Coal 1 program with the addition of allowed pre-award costs.

RECOMMENDATIONS:

- The procedure used in Clean Coal 1 is recommended with an absolute minimum of 90 days for proposal preparation and allowance of pre-award costs.
- Do not "overselect" projects to be followed for deselection after an initial phase.
- Do not have a "b" list, but place any funds remaining from projects deselected as a result of unsuccessful negotiation into the next solicitation.
- Announce a specific period for the completion of negotiations and ask for a plan for completing negotiations within this time frame in the proposal. One year was suggested as a reasonable period of time.

Evaluation Criteria/Program Policy Factors:

Evaluation criteria and program policy factors were major subjects of discussion, with a number of views expressed on a diversity of aspects.

Innovation was stated as a criterion that should be of significant importance. Marketability was also noted to be an im-

portant criterion. In terms of formal proposal evaluation, there was general agreement that the financing aspects should be given more weight than in the previous solicitation.

The Lewis/Davis criteria were discussed, and some concern was expressed that absolute adherence could result in the exclusion from the solicitation of a number of good projects. The solicitation should accommodate, according to the attendees, both retrofit projects and new "greenfield" projects as long as the technology is applicable to existing facilities. Additionally, it was felt that other applications, additional to electric utilities, were legitimate and appropriate for the solicitation, including synthetic fuels from coal, and industrial projects. Additionally, projects at western sites should be considered on the basis of the applicability of the technologies, rather than directly on their compliance with some of the acid rain-related criteria.

RECOMMENDATIONS:

- Stress technical innovation and marketability of the demonstrated technology as important evaluation criteria.
- Enhance financing as an evaluation criterion to weigh it about equal in importance to the technical aspects of the project.
- Projects located in states which have implemented regulatory incentives should not directly receive increased points in the evaluation scoring.
- The solicitation should provide for proposal deselection if negotiations do not proceed at a satisfactory pace subsequent to selection by DOE.
- The Lewis/Davis criteria should be implemented cautiously in order to avoid precluding consideration of meritorious projects, including industrial (non-electric utility) projects and energy production. The solicitation should, as in the previous PON, emphasize program policy factors that ensure a diversity of applications, technologies, and locations.
- Marketability of proposed technologies, and their ability to comply with criteria such as the

cost-effectiveness of pollutant removal, should be presented by the offerors as part of their proposals (and evaluated by DOE based on proposal documentation).

- The requirement to certify that the technology will be capable of complying with the Clean Air Act was not considered necessary by some.
- The special provision in CCT-1 that forces participants to procure zero-deductible insurance, because the government will not allow losses as an allowable cost, increases the overall cost of the project.

Cost Sharing:

Some of the attendees were concerned that Government 50% cost sharing might not be adequate to support certain projects because of the absence of market demand and the risk associated with the project. Accordingly, the availability of financing support for such projects might be scarce.

RECOMMENDATION: Consider a greater incentive for certain projects by increasing DOE cost sharing to exceed 50%.

Recoupment:

A lengthy discussion was held on the principle of recoupment on projects such as those planned for the ICCT solicitation. It was felt by many that, because of the lack of incentive/market for some of the technologies, the requirement for recoupment was a deterrent. The attendees did agree that recoupment of the Government's cost share, from future profits upon conclusion of the demonstration projects, is appropriate if sufficient profits are available and if the recoupment does not negatively affect the competitive position of the technology. However, electric utilities, because of their regulated nature, should not be required to reimburse the Government from continued operation of the demonstration projects unless they are allowed to recover costs by the public utility commission.

RECOMMENDATION: Provide for recovery of the Government's cost share from projects that are successful, but reimbursement should derive from profits subsequent to the DOE-supported demonstration projects. A

recoupment plan should be negotiated with the cooperative agreement stipulating the conditions under which recoupment will be consummated. The plan should be reviewed by DOE and the contractor at the end of the operational phase of the project to determine if it is still appropriate. The recoupment plan should permit flexibility of terms, payback schedule, etc. □

Chapter 5

WRITTEN COMMENTS RECEIVED IN RESPONSE TO THE MEETINGS NOTICE

5.1 Explanatory Note

The notice of the public meetings that appeared in the Federal Register on July 10, 1987, included a provision for the submittal of written comments for consideration by the Department of Energy (DOE) in planning the agendas for the meetings. Additionally, individuals who were not able to attend the public meetings in person were invited to submit written comments which DOE would consider in the course of developing the Innovative Clean Coal Technologies (ICCT) solicitation.

Thirty-two written comments were received from a diversity of interests, including academia, private industry, electric utilities, special interest groups, and governmental entities. In the materials that follow, DOE has deleted all references to names, titles, organizations, etc., in order to confer anonymity on parties who may not wish to be identified, and also to permit suggestions and expressions of concern to be judged on their own merits.

Section 5.2 summarizes the principal views expressed in the written comments in an abbreviated "bullet" format, categorized by subject.

Finally, the actual verbatim excerpts from the letters received are provided in Section 5.3, expurgated to remove identifying references. These excerpts usually reflect the totality of what each correspondent submitted on each of the major "Subjects of Particular Interest" identified in the Federal Register notice, except in rare instances when appendectory or supplemental material was provided that could not be accommodated, or where the extent of the submitted discussion was inordinately lengthy for complete excerption here. In all instances, every effort was made to reflect the major message conveyed by the submitter. Material provided in the written comments that addressed other aspects of the ICCT solicitation are excerpted under the heading, "General Comments."

5.2 Summary Highlights of the Views Expressed in the Written Comments

5.2.1 Qualification Criteria:

- Include the removal of CO_2 from stack gases as eligible for support in ICCT solicitation, i.e., support both acid rain and greenhouse effect mitigation.
- Specifically solicit proposals for small boiler applications (100 MWe or smaller).
- Consider technologies that include "select gas use."
- Permit simplified applications for medium- and small-sized coal-fired municipal utilities, requesting support of $1 million or less.
- Technologies should be expected to meet the objectives of the Clean Air Act without being subject to New Source Performance Standards.
- Requirements for control of the project site should be eliminated during the preliminary evaluation period.
- In evaluating options for retrofit technologies, utilities should not be restricted to the U.S. technologies alone. Consider retrofit technologies which are being developed in foreign countries, but which either have not been tested on U.S.-mined high-sulfur coal or are as yet untested in the U.S.

5.2.2 Evaluation Criteria:

- Distinguish between development and deployment phases of ICCT so that untested technologies are not prematurely put into widespread commercial use. Establish distinct evaluation criteria, etc., for each.
- Fund technologies for converting existing oil- and gas-fired facilities to coal use.
- Ensure support for Western coal projects.
- DOE should stipulate specific time limits for completion of negotiations and signing of agreements once the awards selection is announced.
- Accept technologies which can reduce the cost of producing additional power from coal, but which are not directly applicable to retrofit or repowering.
- Consider technologies for the development of transportation fuels from coal. If not acceptable, the solicitation should clearly so state.
- Recognize that "dollar/ton of sulfur dioxide removed" may be a misleading parameter in comparing technologies.
- Criteria for ICCT should relate the cost of the technology not to the cost of flue gas desulfurization but rather to the cost of low-sulfur coal.
- DOE should relax its present policy in obtaining patent rights and data rights.
- Clarify criteria for commercial acceptability of a demonstrated ICCT.

- Program policy factors should accommodate a diversity of technological applications, including industrial projects (specifically, smelting and ferroalloys industry), gasified or liquefied coal, or coal mixed with other fuels.

5.2.3 Two-Phase Solicitation:

- Do solicitation in two phases: 1st, request limited information and create "short list"; 2nd, request additional detailed information.
- Use a two-step approach that allows going back to offerors for "best and final" offers.
- Provide more flexibility in the phased approach; consider a milestone approach as the monitoring mechanism for the program.

5.2.4 Environmental Requirements:

- DOE should relax the environmental monitoring plan guidelines provided in the previous PON (taken from the Synthetic Fuels Corp.).

5.2.5 Cost Sharing:

- Define "cost sharing credits" in broader (more lenient) terms, including the costs associated with prevention of environmental impacts.
- Support proof-of-concept R&D at non-profit organizations by not requiring cost sharing.
- Cost sharing should be on total-project basis, not for each phase.

5.3 Verbatim Excerpts of the Views Expressed in Written Comments

5.3.1 General Comments

... heartily endorses the proposed Innovative Clean Coal Technology solicitation, and urges that sufficient funding be provided and firmly committed over a period of several years. This action will ensure that a broad spectrum of cleaner and more economical coal-based energy utilization technologies becomes available to the nation. In the selection of such technologies, it is important not only to assure a cleaner environment, but also to address the long-range imperative that abundant coal must continue to replace dwindling and less stable supplies of petroleum and natural gas.

* * *

Although we are not in a position to propose specific projects, we will discuss certain new technologies that could be funded under this clean coal technology solicitation and which combine the use of natural gas with coal to reduce coal's emissions.

Select Use

Select gas use, or "select use," is a term that refers to a relatively new concept in fuel combustion -- the burning of natural gas with less environmentally attractive fuels in the same or separate combustion units for environmental control purposes.

Select use may involve the combustion of gas and another fuel (most often coal) in the same combustion unit as a fuel mixture. A more common approach, and less difficult from an engineering perspective, is "bubbling" which involves the concurrent combustion of gas and some other fuel in separate com-

bustion units and the averaging of the emissions from the two separate sources. Another approach entails the seasonal substitution of gas for other fuels.

These concepts have moved from theoretical studies to the point where more than two dozen applications of select use have been implemented -- mostly via so-called "bubbling." In addition to bubbling, at least four major institutions are conducting research into the simultaneous combustion of gas and other fuels in a single unit. There are three primary foci of this research as it relates to coal combustion: (1) reburn technology to reduce NO_x and SO_2 emissions; (2) reburn combined with sorbent injection; and (3) co-firing.

(1) Reburn Technology

Reburn is a post-combustion pollution control method which can be used to reduce NO_x levels found in the combustion products of coal-fired industrial boilers. Natural gas (or another fuel) is injected into the exhaust from a coal-fired boiler, creating a fuel-rich zone in which the NO_x undergoes a reaction and is converted back to nitrogen. Air is added to complete the combustion process. The reburn process could easily reduce NO_2 emissions by 50 percent. The ... are currently conducting research on the reburn process to determine: (a) how close the reburning fuel should be relative to the combustion zone; and (b) how much time should be allowed for reburning before air is injected into the process.

(2) Reburn Combined With Sorbent Injection

One of the more promising SO_2 control strategies is to inject calcium-based sorbents into the combustion chamber to capture the sulfur prior to the boiler outlet. Gas may offer improved sorbent injection performance benefits by more effectively controlling the conditions at which limestone sorbent is calcined and mixed with the coal combustion flue gases; it may help to avoid coal-ash/sorbent interaction problems that decrease sorbent surface area; it can be used more effectively to optimize the temperature profile of the sulfation zone where sulfur capture occurs; and it reduces the amount of

sorbent material needed. The ... funded by the ... is currently conducting field tests on three existing boilers hoping to demonstrate reductions of 50 percent in SO_2 and 60 percent in NO_x with the use of 15 percent to 20 percent natural gas via reburn/sorbent injection.

(3) Co-Firing

Co-firing is the burning of a limited amound of gas with coal to improve operations and reduce emissions of large power plants. Not only does the use of gas reduce emissions of sulfur dioxide, particulate matter, nitrogen oxides, sludge, ash and many other pollutants, but it can also enhance boiler performance and result in lower maintenance costs and fewer plant breakdowns. Co-firing also provides cleaner and quicker start-ups and insurance against disruptions in coal supplies.

This technology is now being tested at several facilities, including ... powerplant. This program was initiated to reduce plant operating costs associated with coal burning, and environmental gains are being realized as well.

CONCLUSION

... believes that "select gas use" offers the potential of significant advances that will permit coal to be used in a clean, environmentally sound and cost-effective manner. We urge that the Office of Fossil Energy consider these technologies fully when it determines which specific clean coal projects will be funded. Moreover, we would be pleased to elaborate on these technologies during your public meeting in Washington, D.C. on September 22, 1987.

* * *

... strongly supports the ICCT program. ... believes that federal government investment in clean coal technology is an excellent use of federal funds, one that is likely to provide a high benefit - cost ratio in terms of productivity, employment, competitive energy costs, and clean air. We offer comments

on aspects of the conduct of DOE's solicitation under specific topics below, first on two topics of special interest to ... and next on the five topics identified for comment in the Invitation.

Applicability to Existing Coal-Fired Plants

... suggests that DOE reconsider its intention to limit the ICCT solicitation to designs that are directly applicable to existing coal-fired plants. ... believes that it would be desirable to allocate some part of the total funding to demonstration projects that would involve gasified or liquified coal, or coal mixed with other substances, used in powerplant designs that may be substantially different from existing coal-burning facilities. Such an allocation would be consistent with the intent to provide a "21st Century" state-of-the-art, as indicated in the Invitation.

Applicability to Small Powerplants

... suggests that DOE specifically invite proposals for ICCT projects involving small boilers, such as boilers for generating units rated 100 megawatts or less and similar industrial boilers. It appears to be the case that certain ICCT's are applicable to these smaller boilers but not to larger ones, at least in the immediate future. In terms of emission reduction, projects involving large boilers may appear more attractive, but it is important that the ICCT program attack the problem across the board. To simplify evaluation of project proposals, a specific part of the total funding should be allocated to small-scale projects. An attachment [not provided here] identifies publicly-owned utilities operating small coal-fired plants.

* * *

A review of the federal register program synopsis indicates a strong desire by the DOE to include better participation by electrical utility companies in the ICCT program. If so, this is a very welcome initiative, since to meet the special envoy's

criteria and other program objectives without utility involvement would be very limited endorsement of the CCT potential.

... the DOE may want to consider a two-step approach to selecting competing technologies during the application of comparative cost analysis, such that all candidates can propose "Best and Final Offers" (BFO) to demonstrate least-cost approaches. During the interim of the DOE selection period, the respondents will have had an opportunity to fine tune their technical, management and financial offers in anticipation of the BFO submittal. This will also tend to speed up negotiations, especially finalization of project cost commitments.

* * *

"IT IS OUR OPINION THAT THE GOVERNMENT'S INNOVATIVE CLEAN COAL TECHNOLOGIES PROGRAM ON ACID RAIN SHOULD INCLUDE CAPTURING AND/OR SCRUBBING CARBON DIOXIDE FROM COAL-FIRED STACKS."

The program should include all pollutants which directly cause or contribute to Acid Rain. Carbon dioxide is the major contributor both to Acid Rain and the Greenhouse Effect. Acid Rain is synonymous with sulfur dioxide and oxides of nitrogen, however, the total of SO_x plus NO_x is less than 50 percent of the acidity of Acid Rain. Carbon dioxide, when combined with rain forms carbonic acid, which accounts for more than 50 percent of the acidity in Acid Rain.

... currently has a proprietary process which allows the economic removal of carbon dioxide from high sulfur coal-fired smokestacks and its conversion into FDA approved food grade liquid CO_2 for resale. In the process of purifying the CO_2, we remove both the sulfur dioxide and oxides of nitrogen. The flue gas returned to the smokestack and atmosphere would have 0.35 PPM by volume of SO_xs and less than 50 PPM by volume of NO_xs.

We desire to participate in the Department of Energy's (DOE) innovative clean coal technologies program and feel that we have the TECHNOLOGICAL FIX for both Acid Rain and the Greenhouse Effect. Therefore, we hope that the DOE's innovative clean coal technologies program will encompass capturing CO_2 pollutant from smokestacks.

* * *

3. DOE cost sharing should be 50 percent on a total project basis rather than 50 % for each project phase. Electric utilities are rigorously regulated entities and it is extremely difficult to obtain acceptance of "high-risk" capital investments into the rate base by Public Utility Commissions. If DOE would cost share a higher percentage of the capital costs but not more than 50% of the total demonstration cost, the electric utility would have a better opportunity to obtain regulatory acceptance of a high-risk clean coal technology project.

4. Clean coal technology which is considered commercial in Europe and in Japan but not yet demonstrated in the U.S. should not be excluded from DOE clean coal technology funding for projects involving commercial installations. Because of the regulatory aspects discussed above, utilities need financial incentives to assume the risk associated with technologies not demonstrated in U.S. utility environment while burning U.S. high-sulfur coals.

* * *

... plans to submit for consideration an industrial project which would significantly affect the world competitive position of the American smelting industry in general and the American ferroalloys industry specifically. Our project, as well as other diverse proposals, which maximize the use of

U.S. coals and minimize environmental impact, would be precluded from the competition if the original intent c Clean Coal Technology is too severely limited.

To summarize, ... believes that the Clean Coal Technology program offers a unique opportunity for American business and Government to cooperate in a meaningful way to help make American industry competitive in an environmentally enhancing way. Funding for a broad range of technologically feasible projects to maximize the effectiveness of the Government's investment is the correct course of action. Therefore, we strongly support Program Policy Factors which allow a breadth of diversity in the competition.

* * *

Recommendations

We urge the Congress and the Department of Energy to work together to devise a program to provide significant funding for "proof-of-concept" development and testing of newly emerging coal cleaning technologies. This program should provide funds in the range of $5 to $10 million per project for periods of 3 to 5 years to pay the costs of design, construction, testing and evaluation of laboratory-scale to small pilot plant-scale test facilities. Such test facilities would be directed toward devising ways of bringing the process out of the laboratory and proving the technical and economic feasibility of constructing commercial-scale plants utilizing the process. The program should be restricted to processes that can be shown to have significant promise of technical and economic feasibility on the basis of extensive laboratory tests. Access to the program should be restricted to non-profit research institutions, universities and the like, and to small businesses that would normally be unable to raise the necessary capital for development of such a process.

Over the next 40 years, even the most recently constructed coal-fired powerplants will need to be replaced. New plants coming on line will certainly face the existing Revised New Source Performance Standards, and may face even more strin-

gent air pollution control standards in the future. Those standards will mean that a large portion of the coal produced in the United States will have to be subjected to at least some cleaning to meet these performance standards. Major portions of the nation's coal reserves are medium- to high-sulfur coals that will require substantial cleaning if they are to remain environmentally acceptable fuels. Since flue gas scrubbers, remain costly to install, operate and maintain, and they produce large quantities of essentially useless wastes, we believe that pre-combustion coal desulfurization will be an increasingly important technology in the future. The nation's non-profit research centers, public and private universities and small businesses can plan an important role in the development of new technologies for coal cleaning, but only if they can receive support for the more costly steps of process development that lead toward commercialization. Given that support, we can hope that these newly emerging technologies will allow us to continue to use our nation's most abundant energy resource in an environmentally responsible manner.

* * *

I have followed, with great interest and concern, President Reagan's innovative clean coal technologies (ICCT) program. I feel this ICCT program should include both Acid Rain and the Greenhouse Effect which are two of civilizations' greatest problems. As you know, both are substantially caused by carbon dioxide (CO_2).

For years we have talked about scrubbing CO_2 from smokestacks. Surely, if scientists can separate oxygen from air, they can separate carbon dioxide from flue gas. It makes a lot of sense to me to look at the whole smokestack pollution problem and not just the sulfur dioxide (SO_2) problem. What could be more innovative and enhance U.S. technological leadership more than solving both the Acid Rain and the Greenhouse Effect problems.

Capturing CO_2 from smokestacks should be included in the Department of Energy's innovative clean coal technologies program. We thank you for your time ...

Written Comments

* * *

... is supportive of DOE's innovative clean coal technologies (ICCT) solicitation goal to implement the President's March 18, 1987, decision to seek $2.5 billion in financial assistance for the demonstration of clean coal technologies that are applicable to existing coal burning facilities.

The industrial base of ... is primarily the iron ore (taconite) and wood products industries, both requiring steam and electric energy. Over the last several years the ... taconite industry has experienced a drastic drop in competitiveness due to foreign steel market influence. Providing a more cost-effective, environmentally acceptable beneficiated western coal to the industrial and utility boilers supplying the coal generated steam and electric energy, could help increase competitiveness of both existing and new industry.

... would like more information on what criteria DOE plans to use to determine whether an ICCT, upon demonstration, will/could be a commercial success.

* * *

1. DOE appears to have two objectives - first to demonstrate an innovative technology that can be marketed here and abroad and secondly to fund a project that will provide a credible demonstration emphasizing high sulfur coal and repaying federal dollars. This seems to lend itself to a two-tiered proposal approach. Request enough detail to rank proposed technology applications, then prioritize or short-list them before requesting detailed project information such as notarized teaming arrangements, marketing studies, etc. Using a two-tiered approach would save both proposers, evaluators and negotiators substantial time and money.

3. DOE's Fossil Energy Program already contains technologies that are ICCTs already. How do they enter this cycle of selection and implementation? Possibly the first tier of prioritizing or short-listing technologies should include time-phasing guidelines: e.g., these are considered first generation possibilities and those are considered second generation. Funding would be given to both through the ICCT with the intent that the second generation technologies would become the leading contenders for future implementation. If this particular mechanism is not used, some other means of integrated development between Fossil Energy and Clean Coal Technology must be used to insure longer term technology growth.

4. Granted that high-sulfur Eastern coal is a commodity that has high economic value. Also, technology that is applicable to that commodity is also marketable abroad. Nevertheless, the largest coal reserves in the U.S. are in the Western U.S. As a nation, we cannot afford to ignore the internal and external market potential of Western coal. The Pacific Rim has a tremendous market potential for both Western coal and Western coal technology.

   Internally, the markets in the southwest United States and the Pacific coast, particularly Southern California will require clean means of producing electricity as those geographical areas continue their rapid population growth. The logical fuel for that electricity is Western coal. Both politically and economically a concern for Western coal projects must be a part of the ICCT.

5. Consideration should be given to defining cost share in broader terms, e.g., previous industrial cost sharing in a particular technology and the costs associated with prevention of improvement of environmental impact.

   Cost share credit should be given for early industrial partnerships with the Federal government in the development of an acknowledged ICCT.

   Credit should also be given to the host utility of an ICCT retrofit that (1) prevents further deterioration or (2) improves an area of existing environmental concern. Cost

share credit for immediate environmental improvement (with defined goals to be attained) brings the ICCT program to a very practical level of achieving its desired goals.

* * *

The resolution further expresses our support for conservation programs, which, in our view, are equally as important, vis-a-vis acid rain, as are clean coal technologies, and could help provide a grace period in which the new technologies can be properly tested. It is our view that a distinction should be maintained between the development and the deployment phases of ICCT so that untested technologies are not put prematurely into widespread commercial use.

* * *

Because of ... concern for air quality, current environmental conditions limit the use of coal for electricity, space-heating, and industrial process uses. If coal could be burned without adversely affecting the environment, millions of people could benefit. Of course, the beneficial effects would be more far reaching than just .... An increased use of bituminous coal, found in the east, would benefit several coal producing states and help reduce our dependence on imported oil.

As discussed below, the ... office recommends that DOE's solicitation fund clean coal technology for industrial facilities which have the capability of converting from oil or natural gas to coal.

* * *

... acknowledges that Congressional Guidance is required to better define the emphasis of the expanded ICCT Program. Specifically, both technology demonstration and technology deployment are envisioned within an expanded Innovative Clean Coal Technology Program. While this ... supports such a dual orientation, we are also of the opinion that mutually distinct guidelines, evaluation criteria and program policy factors should be fashioned for each initiative.

Of note, then, is that the following Summary Views and Comments of the ... apply only to technology demonstrations. The ... is prepared to register its views and comments regarding a technology deployment emphasis. However, we prefer to delay the submission of these perspectives until such time that Congressional guidance and appropriation is in hand.

* * *

... would be interested in participating in the Innovative Clean Coal Technology program. In so doing, we are of the opinion that it would be prudent to exercise discretion with respect to the amount and volume of application data and required solicitation response to be more in keeping with our size utility.

We would respectfully suggest that a simplified application form be designed and produced by the Department of Energy expressly for medium and small sized coal fired municipal utilities similar to ... (application requirement of $1,000,000 or less).

Through adherance through such procedures it is our belief that a number of viable candidates could be located particularly within the mid-West to respond to the innovative clean coal solicitation. These candidates would fulfill a very needed application segment of the entire coal boiler industry and would provide for meaningful solutions to reduction in air emissions from coal fired equipment.

... we believe that it would be appropriate to participate in the Innovative Clean Coal Technology programs, as spon-

sored by the Department of Energy. Moreover, we believe that the Department of Energy should address the requirements of the medium and the smaller sized municipal utilities located in the mid-West burning native coal fuels which could make a significant contribution to the overall impact of the clean air strategy of the Department of Energy.

* * *

(6) "... [technology] will comply with the Clean Air Act" (Federal Register Vol. 52, No. 132, July 10, 1987, pg. 26125, left column,beginning at line 44).

Technologies should be expected to meet the objectives of the Clean Air Act without being subject to New Source Performance Standards. The July 10 notice in the Federal Register alludes to this in its reference to finding cost-effective technologies that are widely applicable [Federal Register, Vol. 52, No. 132, July 10, 1987, pg. 26125, center column, at (b)(ii), and (b)(iii)].

(7) Deployment of Innovative Technologies

Both houses of Congress are actively involved in this debate. It is important to note that the DOE action on the second solicitation and Congressional action concerning deployment are both still incentive programs to promote private sector participation.

* * *

Additional Topic Time Limit for Negotiation:

In the case of the 1986 P.O.N., there was no time limit set for completion of negotiations for Cooperative Agreements with the initial awardees. As such, some negotiations are still continuing - and as a result, DOE had to request twice already for extension of the alternate proposals. This kind of delay,

however, can render some proposals infeasible - since many projects yield its maximum benefits during a specific time period only. We therefore suggest that DOE should stipulate specific time limits for completion of negotiations and signing of agreements once the award of funds is made to a proposer.

* * *

We would like to bring to your attention the following areas of importance:

1. Technologies which can reduce the cost of producing additional power from coal but which are not directly applicable to retrofit or repowering should be allowed to be included under the solicitation. This would provide the opportunity for technologies which will provide significant environmental benefits to obtain assistance.

2. Since the economic attractiveness of a given project can be altered during proposal reviews and negotiations with DOE, it is recommended that the control of the site requirements be eliminated during the Preliminary Evaluation period. If DOE requires that the demonstration site be owned or controlled prior to submittal, it could preclude proposals for important projects from being deemed to be complete. Thus, DOE should allow the Preliminary Evaluation to be initiated prior to final site control to increase the flexibility of proposers.

* * *

... with regard to the specific comments involved with the second solicitation, we wish to emphasize the need for allowing a project to be equally considered that involves the development of transportation fuels from coal, as well as these projects involved in burning high sulfur coal cleaner. We, as a coal company, recognize the importance of expand-

ing the markets of coal into the transportation sector that will lead to the reduction of imported oil and the development of new markets for coal. We believe that the future increased use of coal must be related to developing new markets for coal and those new markets certainly exist in the transportation sector which is currently dominated by oil. For example, the locomotive engine market, the octane enhancement market for gasoline, as well as industrial use of a liquid coal, could all contribute to increased markets for coal by reducing the need for imported oil, as well as converting coal into a cleaner form of fuel that would also lead to reduced sulfur emissions. In this light, we request that the U.S. Department of Energy allow full consideration of those technologies relating to the development of coal into liquid forms that could be used in the transportation sector.

Third, the other area of technology that we feel is important is in the area of coal cleaning to remove sulfur and ash before it is ever burned or used in utility and industrial applications. We believe that it will be more efficient in the long run to reduce the sulfur and ash at its original source of mining and preparation rather than at the end users location. By cleaning coal at the mine-source, one eliminates the need for waste disposal at the end-source, as well as the cost associated with the transportation of large quantities of impurities that have no combustion value. It is for this reason that we believe coal preparation projects should be an important consideration in the selection criteria of the second round of solicitations.

In summary, if the above two types of new technologies; converting coal into liquid fuels for transportation application and coal preparation type projects are not going to be fully considered in the upcoming solicitation, it is only fair to those developing technologies in these areas to be informed of this clearly before proposals are submitted in order not to waste valuable time and expense in preparation of these proposals.

* * *

It is our intention to participate in the discussion work shops to provide information as to how the advanced technologies of artificial intelligence/inductive learning and on-line analytical instrumentation contribute directly to the goals of the Clean Coal Technology program and at the same time respond to the President's goal of enhancing U.S. technology leadership and international competitiveness.

... is a recognized leader in the practical application of artificial intelligence for improved operation of fossil power plant turbine-generators. In addition, ... has an established product line of digital instrumentation equipment that is in use in both fossil and nuclear power plants as well as in chemical and metal industries. These technological capabilities, plus ... international experience in the systems engineering of advanced instrumentation and control systems for power plants when combined with the ... on-line bulk material analyzer provide for the successful implementation of a demonstration ... System CCT program consistent with the goal stated in the DOE Federal Register announcement.

* * *

The primary goal of ICCT is to accelerate the demonstration of retrofit technologies for reduction of emissions from coal combustion. Electric utilities consume over 80 percent of the coal used in the United States; therefore, the program should place particular emphasis on addressing the issues that pertain to the application of technology to the utility sector.

- The focal point of ICCT should be to accelerate the demonstration of retrofit technologies which electric utilities may not otherwise install in a commercial facility because of technological risks or uncertainties. Without Federal cost sharing, a utility would not have a strong incentive to take such a risk.
- In evaluating options for retrofit technologies, utilities should not be restricted to the U.S. technologies alone because extensive and innovative work on emission

reduction is occurring throughout the world. The DOE should not preclude the option of demonstrating retrofit technologies for ICCT which are being developed in foreign countries, but which either have not been tested on U.S. mined high-sulfur coal or are as yet untested in the U.S. utility service which tends to be more demanding.

Based on our experience with the ..., we have some specific recommendations for the ICCT Program. The details of these recommendations are provided in the Attachment [not provided here]. Our recommendations pertain to the following issues:

1) DOE should adopt the approach of other federal agencies and relax its present policy in obtaining patent rights and rights in information.

2) DOE should provide more flexibility in the phased approach and consider a milestone approach as the monitoring mechanism for the programs.

3) DOE should eliminate or relax its repayment policy.

4) DOE should provide up to 120 days between issuing the solicitation and receiving proposals.

5) DOE should recognize that $/ton of SO_2 removed may be a misleading parameter in comparing technologies.

6) DOE should continue with a programmatic Environmental Impact Analysis to preclude the need for site-specific Environmental Impact Statements. However, DOE should relax the Environmental Monitoring Plan Guidelines in the February 17, 1986, Clean Coal Technology (CCT) solicitation. Specifically, we question the need of employee health monitoring data for ICCT.

1) Patent Rights and Rights In Information:

Since the goal of the ICCT Program is demonstration of clean coal technologies, it is expected that participants will propose technologies which are beyond bench scale and pilot plant testing. Therefore, the DOE should acknowledge that a significant amount of private money may have already been expended in developing the

technology. Hence, the rights of the Federal Government pertinent to partents and technical information should be narrowed from the provisions used in the February 17, 1986, Clean Coal Technology (CCT) solicitation. The existing provisions are geared towards technologies for which the DOE has funded development from the very early stages.

The DOE should recognize that its existing policy of obtaining broad-based rights in technical information and patents may actually inhibit obtaining the best and most-advanced technologies in the actual demonstration project. This is because a manufacturer may be inclined to withhold new innovations from a demonstration facility in order to preclude the government from getting these rights.

Further, the objective of the ICCT program is to accelerate the commercialization of these technologies. However, the role of DOE in the ICCT Program is to monitor and review the progress of demonstration projects. DOE does not have a mandate to direct the future use of these technologies, as that role rightfully belongs in the marketplace. Imposing the CCT requirements of patent rights and rights in information on manufacturers may inhibit the commercialization of technologies in the marketplace and thus is contrary to the program goals.

Therefore, the DOE should re-examine its policy on patent rights and rights in information, and move in the direction that other government agencies have taken to relieve private industry from these requirements.

2) Phased Programs:

In CCT, the DOE required a three-phase program, with equipment procurement part of Phase II (procurement, construction, and start-up). This phased approach may be applicable to a single-process design, but is not conducive to timely development of large-scale technology demonstration projects, particularly in the utility sector.

The engineering and design of a demonstration project consists of three elements: detailed engineering of the new

technology itself, development of the design drawings for the appurtenant systems required to support the new technology, and development of the construction drawings required to install the equipment. In order to accomplish these activities, certified information from equipment vendors is required, thereby necessitating initiation of the procurement process early in the project.

The phase concept that DOE used for CCT, where procurement is part of Phase II, can severely inhibit the Phase I activity of engineering and design of the demonstration facility.

If a phased concept is required for ICCT, participants should be given the option of including procurement in Phase I. Further, DOE should allow participants necessary flexibility to modify the phases to tailor-fit their projects.

In the execution of a major utility design and construction program, decisions to proceed are usually based on meeting certain milestones rather than completing actual phases. Typical milestones include keeping within budget; obtaining key permits; and meeting specific procurement requirements, certain design milestones, and certain construction activities. Generally, the milestones are project specific. Therefore, implementation of the ICCT Program could be accelerated if DOE could base releasing additional cost-sharing funds on meeting specific milestones, which could be identified by the participant. This approach will satisfy DOE's monitoring requirements and not impede the standard utility construction process.

* * *

... applauds DOE's initiative of including the private sector in the formulation of guidelines for a possible solicitation. Since the private sector would be responsible for funding at least 50 percent of a project's costs under such a solicitation, industry's

views can help assure that the planned ICCT solicitation elicits the largest number of high quality project proposals possible.

The ... is in the process of surveying its members and other interested parties to sample the private sector reaction to issues raised in the Federal Register Notice of July 10. I have attached a copy of our survey for your review [not provided here]. Once we have received and analyzed the results of this survey, we will be better able to comment upon the proposed guidelines.

Again, we will provide additional comments on the proposed ICCT solicitation after we have received and tallied the questionnaires sent to our membership. We are especially interested in commenting upon the Department's treatment of project-derived data and other intellectual property as well as the government's need for background patents. The ... is also concerned about the emphasis that DOE has placed upon the need for the clean coal program to carry out the provisions of the Report of the Joint Envoys' on Acid Rain. While the Envoys' recommendations are important, the clean coal program goals are somewhat – and importantly – different. It would appear that Congress will indeed direct that a portion of additional appropriations be directed toward existing electric generating facilities.

However, the DOE will, hopefully, seek comment and participation from industry on industrial uses of clean coal technologies and also on new facility applications of clean coal technologies.

* * *

1. Allowing less than three weeks for written public comment is patently designed to exclude public participation. Citizens in Ohio have much to contribute to this consideration and I will do my part to pass the word on, if you notify me that further communication will be considered.

2. Criteria for clean coal technology must relate the cost of the technology not to the cost of Flue Gas Desulphurization, but to the cost of low-sulphur coal. FGD is approximately four times the cost of fuel switching in Ohio (with no native low-sulphur coal) and the obvious conclusion is that Ohio will not accept a $35,000 annual premium for each coalminer whose job is protected. A modest premium, perhaps 25 percent more than the cost of low-sulphur coal, may very well be worth the job protection, and be a realistic alternative in the event that Ohio implements an Acid Rain control program. Failure to acknowledge this principal will result in the DOE wasting even more money on unwieldy technology that will not be implemented. Projects that do not comply to this guideline might be considered providing they will definitively advance scientific understanding allowing further projects which are expected to achieve this level of cost-effectiveness. Examination for this criteria must be rigorous and described in clear, plain language in project applications and in DOE review documentation.

* * *

- In the first solicitation, there appeared to be a requirement to adopt a number of DOE-specific project controls, such as cost and scheduling systems. ... recommends that DOE consider its role more as an investment banker than a project manager, consistent with insuring that projects are completed in a timely manner.

* * *

I would like to raise a larger issue that is not currently addressed. As you know, the ... is specifically concerned with demonstration of innovative SO_2 and NO_x control technology that can be retrofitted to a wide range of existing coal-fired

boilers. The ... position is that these technologies offer the greatest potential for cost effective near term reductions if transboundary air pollution control is deemed necessary. Therefore, I would like to see the solicitation structured in two parts: 1) a specific target for retrofit technologies; and 2) a second allotment for repowering technologies. Since the retrofit technologies are usually much less capital intensive, the relative split of funds could be established with that in mind. In addition, since retrofit technologies do not contribute to increased utility generating capacity, consideration should be given to some form of incentive (e.g., eliminate the payback requirement) for retrofit demonstrations. I am certain that the ... staff would be pleased to assist in working out the details with DOE.

... specifies that grants and cooperative agreements will be used. At least one version of the Clean Air Act Amendments also specifies the possibility of using contracts. This procurement mechanism should be considered in the ICCT solicitation preparation.

* * *

5.3.2 Qualification Criteria and Preliminary Evaluation Requirements

DOE efforts to discourage multi-participant applications that are inadequately prepared are commendable. Requirements of the legal establishment of a teaming entity prior to notification of selection for negotiation, however, appears to be unduly stringent. Binding letters of intent, in conjunction with a fully detailed business management plan, would be more appropriate in view of the wide diversity of types of organizations expected to respond. The more stringent requirement would be too heavily weighted in favor of pre-existing teaming arrangements and could thus be biased against the newer, and perhaps better, concepts.

* * *

... does not believe the ICCT program would benefit from extremely stringent qualification criteria. On the contrary, overly stringent criteria may eliminate some contenders having worthy projects and sound business arrangements who are unable in the time permitted to complete full team negotiations.

* * *

It appears from a review of first round selections that the DOE has placed an emphasis on the geographical location of a project to be within the northeast quadrant, in particular the trans-boundary area with Canada. This coupled with the change of direction of the program, to one which relies heavily on the recommendations of the Joint Envoys report, could tend to foreclose or discourage equally valued projects in

other parts of the country. We believe that the prospective Program Opportunity Notice (P.O.N.) should clearly indicate the qualification criteria and evaluation criteria, including any program policy factors that will take geographic location into consideration. We do not believe that for demonstration projects that location should receive the same consideration it obviously enjoyed in the prior solicitation. For example, two of the largest coal-fired utilities in the country are located in the southeast quadrant -... - and it would be more beneficial to the overall CCT objectives to encourage their participation rather than discourage it.

... the qualification criteria should establish a preliminary assessment of the projects commitment in terms of organization, financing and conformance to the Special Envoy's criteria. By setting out this qualification criteria in clear terms during the P.O.N. issuance period, the DOE should expect to see more detailed, serious responses which better meet the overall selection requirements.

* * *

a. We would suggest qualification criteria with the greatest emphasis on utility scale demonstration projects and with less emphasis on development projects.

b. The requirement for teaming agreement may effectively eliminate competitive bidding by prospective team participants, for least project cost. To establish a firm teaming agreement within a 60 or even 90 day proposal period would not allow competitive bidding. We, therefore, recommend that the teaming requirement should have an option that the utility provide a proposed project organization with the initial proposal and the teaming agreement be filed after the DOE award is made.

* * *

... thinks that these criteria should be stringent enough to eliminate projects that are less than fully prepared and ready to proceed toward implementation. A proposer must be required to fully demonstrate the technical feasibility of the proposed project. Also, a full analysis of the scientific basis and the ability of the particular proposer to bring the technology to fruition must be made. A proposer should be able to demonstrate the degree of technical readiness of the project and the intent and ability to continue development through the proposal, evaluation and selection process.

Teaming arrangements are sometimes necessary and in many cases enhance the commercialization aspects of the technology. These agreements should be fully executed and notarized to show the legal intent of the partners and the establishment of the legal entity to carry out the project.

Full economic analysis should be required of all proposers. Most importantly a firm showing that the proposed technology would be commercially viable is mandatory and, secondly, the financial ability of the proposer to do as committed should be established.

* * *

We do not believe that more stringent preliminary evaluation requirements and qualification criteria would be in the best interests of the ICCT program. Proposals for qualified projects that without DOE funding would not be embarked on may be discouraged by overly stringent preliminary evaluation requirements. For example, the details and teaming arrangements of a qualified project that would not go ahead without DOE funding, may not be completely worked out before preliminary evaluation occurs, and stringent preliminary evaluation requirements may preclude this proposal from further evaluation.

We feel that the preliminary evaluation requirements not necessarily include compliance with the Clean Air Act. In view of the likelihood of some form of acid rain mitigation legislation, technologies that can economically provide

moderate levels of sulfur dioxide and/or nitrogen oxides removal on existing facilities will be important. These technologies may not be economic for new facilities that require Clean Air Act compliance, but may be well suited for lower levels of removal in retrofit situations.

* * *

... encourages the Department of Energy to define its criteria on "technologies of interest" to permit proposers to make early decisions as to their project's applicability within the Department's program. This would benefit potential proposers in limiting expenditure of funds; and, would help the Department of Energy by limiting the number of less "appropriate" proposals.

... also encourages the Department of Energy to require only "letters of intent" in support of teaming arrangements. The more stringent requirements for establishing the team as a legal entity would assign additional financial burdens to the already significant proposal preparation costs.

* * *

U.S. DOE has raised the issue of whether stringent preliminary evaluation requirements should be used as an early "weeding out" process to reduce the number of proposals for serious consideration. Because the goal of this program is to bring emerging technologies into the commercial market, U.S. DOE should make an effort to encourage a large number of applicants. While this may lengthen the time needed to evaluate the increased number of applicants, it will be more

consistent with the Reagan administration's goal of limiting red tape. This may also locate a new technology which promises to yield desirable benefits.

* * *

The July 10, 1987, Federal Register notice asks whether the solicitation should contain more stringent requirements concerning preliminary evaluation and qualification criteria. It is the opinion of the ... that the less stringent requirements of a letter of intent and a legal certification by the chief legal officer should suffice. We believe this is sufficient to achieve the goal of screening out ineligible applicants without discouraging others from applying for funding.

* * *

DOE asserts that more stringent qualification criteria would ease the evaluation process by limiting the number of proposals to be evaluated.

... believes the existing Preliminary Evaluation Requirements are sufficient. Given the uncertain prospects for successful innovative clean coal technology demonstrations, DOE should be encouraging the development of ICCT proposals. The unknowns associated with researching and developing ICCT's demand that preliminary evaluation requirements and qualification criteria remain flexible.

* * *

Our basic position is that DOE should concentrate CCT efforts on those technologies that are developed to the extent that can immediately be advanced to the demonstration and

application stage. This is certainly in line with the U.S. commitment on acid rain and the objective of utilizing all of our available coals to insure economic long-term energy security.

Specifically, we are in favor of more stringent preliminary evaluation requirements. This would assure the public of getting a earlier and better return on their tax dollars.

* * *

... supports the adoption of more rigorous qualification criteria and preliminary evaluation requirements as a means to improve the relevance and quality of proposals. Additionally, we advise that:

- the technology proposed be sufficiently developed so as to proceed immediately to design for a sustained demonstration operating period without need for substantial additional development work or technical confirmation; and,
- the offeror must provide a letter of intent or executed teaming agreement from all parties sufficiently binding to ensure the formation of a proposed legal entity and/or to assure commitment of the private cost-share.

* * *

We feel it is important to not discourage proposers through stringent initial evaluation criteria.

* * *

We fully agree with the suggestion that more stringent preliminary evaluation requirements should be imposed while

- An electric utility would identify plants as candidates for ICCT retrofits.
- An electric utility, in cooperation with an A/E, would identify candidate ICCT retrofit technologies and develop specifications for competitive bids.
- The utility, in cooperation with an A/E, would evaluate the bids and negotiate a contract with a manufacturer, which would probably be conditional upon DOE participation in the program.

* * *

- Alternatively, a manufacturer may approach a utility seeking a host site for a new technology as a mechanism to develop a program.
- The utility, A/E, and/or manufacturer, would submit a proposal to the DOE.

If DOE were to establish the qualification criteria to reflect such approaches, it could ensure proposals with solid financial backing and from serious proposers who could rapidly initiate the program once a Cooperative Agreement is awarded.

* * *

Given the relatively short timeframe proposed for submittal of proposals under the ICCT solicitation, overly stringent initial evaluation criteria may severely limit the number of responses and the types of projects proposed. Commercial or near-commercial scale demonstrations of many of the emerging clean coal technologies will require enormous capital to

undertake; to expect proposers to have finalized any teaming arrangements prior to even submitting an application is excessive and will have a chilling effect on industry's response.

* * *

The qualification criteria are a good idea; however, sufficient time should be allotted by the SSO for this preliminary evaluation to be completed prior to detailed technical evaluation.

* * *

5.3.3 Proposal Evaluation Criteria and Program Policy Factors

Deep cleaning of coal prior to combustion or conversion should receive the same level of support as post-utilization processes such as flue gas cleanup and systems modifications to accomodate switching to low-sulfur coal. The 1986 Program Opportunity Notice included among its Program Policy Factors "the desirability of selecting for support a group of projects that represent a balance between the goals of expanding the use of coal and minimizing environmental impacts." That need is certainly no less relevant today. Project selection criteria should focus not only on reducing emissions from existing coal-burning facilities, but on development of economical and environmentally acceptable technology that can also be applied to industrial and/or utility boilers that currently operate on petroleum products or natural gas. Stated in another way, the national need is not only for fuel-flexible power systems, but for systems-flexible coal-based fuels applicable to a broad spectrum of current installations at minimized overall cost of retrofit. It is altogether likely that the most attractive approaches will involve integrated control of particulates, NO_x and SO_2 through their removal prior to, during, and after combustion via deep coal cleaning, flame temperature control, sulfur sorbent injection and flue gas cleanup. Experience teaches that success is much more likely from projects that consider such integration from the outset, rather than from those that attempt to force-fit pieces of technology that are separately developed.

* * *

... believes that evaluation criteria should be based on technological and economic factors and projections. Criteria in-

volving state adoption of "regulatory incentives" raises a host of concerns that render them inappropriate for evaluating clean coal technology proposals.

Federal grants are an appropriate and equitable incentive for clean coal projects in that they are available to all segments of the industry. In contrast, many so called "regulatory incentives" are in fact rate incentives designed to increase the rate of return or speed recovery of capital for investor-owned utilities. Non-profit public power systems and rural electric cooperatives do not benefit from such provisions. Such state rate incentives do not reflect on the merits of a particular project and are thus an inappropriate criterion. In addition, it is unfair to penalize any utility (public or private) in the evaluation process because its state has not adopted such a set of incentives.

* * *

a. We recommend that program policy should emphasize technologies that would increase the use of high sulfur coal as a fuel in electric utility boilers, gasifiers, or combined cycles such as with Compressed Air Energy Storage.

* * *

5. In evaluating the project submittals, DOE should emphasize consideration to clean coal projects which will result in maximizing the ability of the utility to dispatch electrical power. If the technology results in improved coal burning efficiency (i.e., a lower heat rate) and reduced variable operating costs, the effected utility unit will generate more annual power since the dispatch priority for the utility unit will be increased. The benefit to the consumer will be electricity at the lowest cost and reduced emissions per generated megawatt.

6. Proposal input information and the reporting requirements should be minimized. The obvious benefits of this recommendation are reduced expenses to the proposer and reduced project costs to the consortium (including the taxpayer), respectively.

* * *

A clear goal is the enhancement of U.S. technological leadership and international competitiveness while utilizing American coal to assure the long-term energy security of the United States. The Program Policy Factors (PPF) as stated in the 1986 Program Opportunity Notice (PON) articulate standards that are totally appropriate to reaching this goal. These PPF's, which we fully support, are:

(a) The desirability of selecting for support a group of projects that represent a diversity of methods, technical approaches or applications;

(b) the desirability of selecting for support a group of projects that would ensure that a broad cross-section of the U.S. coal resource base is utilized; and

(c) the desirability of selecting for support a group of projects that represent a balance between the goals of expanding the use of coal and minimizing environmental impacts.

... would like to see evaluation criteria that are clear and non-redundant. The criteria that we think should be given the most weight during evaluation are:

(1) impact on U.S. competitiveness in a particular industry or industries;

(2) applicability of the technology to the use of U.S. coals as either a feedstock for industrial processes or to coal-fired boilers;

(3) the technical merit and diversity of the innovation across market segments;

(4) potential of the technology to penetrate the market;

(5) the use of existing infrastructure through retrofitting; and

(6) the ability of the proposer to provide financial and technical support for the project.

* * *

... strongly supports solutions to the problem of acid rain. The primary tool must be emissons controls. ... does not oppose the use of clean coal technologies as an additional means to reduce air pollution. However, such technologies must be part of a comprehensive acid rain reduction strategy. Moreover, such technologies must be developed prudently, and not at the expense of other pollution-reducing methods of electricity generation, such as conservation. Unfortunately, DOE's proposal strays far from these principles.

The notice states (52 Fed. Reg. at 26125):

> DOE may also consider, as additional factors to be used in developing criteria [by which to evaluate clean coal technology proposals] ... the extent to which a state that would host an ICCT [Innovative Clean Coal Technologies] project has adopted regulatory policies that would stimulate the commercial replication and deployment of innovative clean coal technologies.

Relying on this language, DOE could coerce states to grant preferential rate treatment to electric companies promising to invest in clean coal technologies. Such unwarranted interference with the ratemaking process could lead to serious inequities and inefficiencies.

1. <u>The Proposal Could Trigger an Interstate Bidding War With Unlimited Stakes</u>: The proposal would force states desperate for economic development to offer ever-increasing rate breaks to electric utilities. The stakes in this game of oneupsmanship would be limited only by the ability of a state's captive customers to afford electric

rate increases. Each state's rate offerings would be calculated to beat its neighbors'; thus the amounts offered would bear little, if any, relation to the amount actually needed to encourage clean coal technology development.

Perhaps the most eloquent testimony to the potential for excess appears in S. 879, now pending in Congress. Purporting to encourage clean coal technologies, this bill in fact would: (1) promise rate increases wholly disproportionate to the need (in fact, the bill's supporters concede they have no idea how high rates would go); (2) encourage electric companies to shift their operations from the traditional jurisdiction of state commissions to the Federal Energy Regulatory Commission; and, as a result, (3) lead to a substantial corporate restructuring of the electric industry, by separating the generating function from the marketing function. The attached analysis explains the problems in more detail [not provided here].

2. The Use of Rates to Stimulate Technological Development is Fundementally Flawed: By singling out electric rates (the proposal says "regulatory policies," but we assume it means electric rates) as funding vehicle for technological development, the proposal rests on three erroneous premises.

    a. Ratepayers, not stockholders, are not necessarily responsible for acid rain clean-up: Who should bear cost responsibility for acid rain clean-up is a complex issue riddled with factual and policy dilemmas. For example, if an electric utility erred in choosing a polluting technology when it built its plants, its ratepayers should not now be charged for the cost of clean-up. Where a uility's choice was prudent but, in retrospect, unfortunate, strong arguments exist for imposing the risk of such misfortune on investors, or at least sharing the risk between shareholders and ratepayers. The questions, as with all ratemaking questions, lie at the heart of the relationship between ratepayers, stockholders and the state regulatory commissions who authorized power plant construction. The answers must be worked out among these same

parties. DOE's proposal to use rates sweeps this complexity under the rug, and imposes a solution not grounded in either fact or principle.

b. It is arbitrary to impose the costs of technological experimentation, a "public good," on the customers of volunteering utilities: Clean coal technology holds potential benefits for the entire nation. It is the classic "public good." to impose the costs of its development on a narrow slice of the population -- those individuals and industries that happen to be the customers of utilities volunteering for the DOE program -- is arbitrary.

c. Electric utilities are poor vehicles for technological development: Underlying the use of electric rates as a funding mechanism is the premise that utilities should be technological experimenters. One need look no further than the power plant construction fiascos of the 1970's and 1980's to question whether this premise has any foundation in history, logic or common sense. The utility industry is a poor candidate for the job, on competence grounds alone.

Moreover, to assign responsibility for technological experimentation to an entity with a monopoly over a necessity is a recipe for abuse. Utilities could use their monopoly power to transform captive customers into investment bankers for multimillion dollar construction experiments. The analogy is, of course, only partially complete. Unlike true investment bankers, ratepayer participation would be involuntary, would carry all the risks, and would promise no financial return.

3. The Proposal Could Lead to Politicization of the Ratemaking Process: To make rates depend on a utility's voluntary decision to experiment with technology is a dangerous aberration from longstanding practice and principles. Ratemaking for powerful electric monopolies is complex and controversial. For over 50 years, this nation has struggled to design and implement procedural protections aimed at producing expert rate decisions insulated from political pressure and economic duress. The operating

theory has been that rates should be set in public, adversarial proceedings by officials appointed for their expertise.

DOE's proposal could corrupt this process. Utility officials would be free to lobby the Secretary of Energy for a grant. To the extent the utility's arguments were based on purported facts, customers -- the prospective funders of the project -- would have no opportunity to contest these facts. The Secretary then could review the rate treatment offered by various states, and privately pressure them, using the grant as a weapon, to offer more. This entire process could take place behind closed doors. Certainly there is a better method for encouraging clean coal technology.

* * *

Technologies that show the most promise for expedient commercialization should be favored. Technologies that have been tested extensively at all but full-scale, and are economically attractive are the most likely to be commercialized soon after or during project execution. We believe that these projects will further the goals of the ICCT solicitation and the intent of the Special Envoys on Acid Rain.

* * *

Among the evaluation criteria for projects, DOE suggests consideration of whether a project's host state has adopted regulatory policies that would stimulate the commercial replication and deployment of innovative clean coal technoloiges. I believe that this should be taken into consideration. It is worth noting that ... General Assembly passed laws which allow clean coal technologies to be added to a utility's rate base while still under construction and to allow research and development expenses to be recovered as operating expeneses. Yet we find that these regulatory policies alone do

not alleviate the financial burden utilities face in installing commercially unproven technologies. There is a need for further assistance; the ICCT demonstration program should satisfactorily meet this need.

Finally, among possible other evaluation criteria to be used in selecting projects, DOE proposes the consideration of the market penetration potential of the technology. I believe that this criteria should be used and that consideration should be given to the potential for penetrating non-utility markets as well as utility generating stations.

* * *

...adopted a resolution which supports Federal funding for ICCT but cautions against providing broad regulatory incentives to encourage its deployment.

The Federal Register notice expresses the view that Federal funding for ICCT should be contingent, to some degree, upon State adopting favorable regulatory policies which would stimulate the project's commercial replication. The ... strongly urges that this issue be fully discussed during the scheduled public meetings and we advocate caution as to how this concept is articulated; whereas it may be appropriate for the Secretary to invest Federal monies where he feels it will be most efficiently used, it is somewhat coercive to suggest that tens of millions of dollars will only be invested in a State if State laws and policies are altered.

We do not take a position on this issue at this time, but feel strongly that regulatory incentives and contingencies such as these could have potentially significant impacts on ratepayers. These concepts should, therefore, be fully discussed in an open forum and appropriate economic analysis should be undertaken. Whereas the costs of certain acid rain solutions

have been relatively well studied, the costs of clean coal technology (Federal cost-sharing plans regulatory incentives) are unknown.

* * *

Evaluation criteria for the selection of projects should generally emphasize the ability to meet the goals and benefits stated in 52 Fed. Reg., at 26124. In addition, the criteria should not be limited to existing coal burning facilities. Such a limitation would be inconsistent with the stated goals of increasing the penetration of clean coal technologies. Today's coal burning facilities are mainly large scale utility and/or industrial process boilers. If the $2.5 billion dealt only with these existing applications, then technology will be delayed which could increase coal use by the small boiler operator in an urban environment which now does not use coal because of space and environmental limitations.

* * *

In applying the Proposal Evaluation Criteria which (potentially) requires the selection of "technologies applicable to the largest number of existing sources" care must be taken to avoid excluding smaller boilers (i.e., 25 to 150 MW class). Retrofit of ICCT to smaller facilities presents several advantages: reduced installation costs, reduced operating and maintenance costs, an increased number of ICCT demonstrations (as a result of lower front end costs), more favorable impact on the magnitude affected generating capacity and potentially greater ease of licensing.

_ does not fully understand DOE's suggestion to include, as a PPF, the extent to which a state has adopted regulatory policies that would foster deployment of ICCT's. It is unclear how DOE would determine what type of regulatory policies would fit this definition.

DOE apparently believes that states with "appropriate" regulatory policies should be given preference in the ICCT evaluation process. Regulatory policies which stimulate ICCT deployment might include states with approved acid rain control legislation or states which have appropriated monies for ICCT. While the former regulatory initiative can indeed provide an important stimulus for ICCT deployment the latter raises questions as to why such states need additional ICCT funds from DOE.

... therefore considers it important that preference be given to those states with approved legislation. Such preference should be incorporated as a PPF by DOE. Further, inclusion of such a PPF is particularly relevant in view of the recommendations made by the Special Envoys on Acid Rain, Drew Lewis of the United States and William Davis of Canada. It is DOE's stated intent to use these recommendations as evaluation criteria.

* * *

We favor proposal evaluation criteria that concentrates efforts on technologies that utilize or beneficiate high-sulfur coal. We feel that technoloes that are adaptable to retrofitting existing boilers should have a high priority. We also feel that states that have adopted agressive clean coal policies should be given a priority for project location.

* * *

Overall, the Proposal Evaluation Criteria should be consistent with those recommended in the Lewis/Davis Joint Envoys on Acid Rain report. Additionally, ... recommends that the Proposal Evaluation Criteria and Program Policy Factors should limit eligibility to:

- technologies that substantially reduce emissions: 30% to 50% for coal beneficiation and by at least 50% for SO_2 and/or NO_x in during and post-combustion systems, from existing high-sulfur coal fired power plants;
- technologies that are sufficiently-scaled and developed to permit immediate and widespread retrofit application to existing high-sulfur coal fired power plants following the demonstration. Proof-of-concept and adequate pilot-scale testing should be completed;
- technologies that reduce emissions cost-effectively at a cost (per ton of pollution removed) below the costs of conventional controls; and,
- projects located in states that have adopted regulatory policies that would stimulate the commercial replication and deployment of innovative clean coal technologies.

* * *

The criteria listed in the July 10, 1987 announcement should be sufficient for evaluation purposes.

* * *

While it may be of interest to DOE to have estimates of prjected economic and technical competitiveness, market penetration potential and applicability of the technologies, these items are generally not sufficiently factual to provide much insight into real potential value. It would appear to be far more important to require additional information on the actual experience gained in developing and demonstrating the proposed technology. This should include actual pilot unit or other performance information which would support the tech-

nical completeness and appropriateness of the technology. This factual information should be weighed heavily in evaluating the potential for success in deploying a technology.

* * *

In the evaluation of technologies for reduction of sulfur emissions, the criteria of dollars per ton of sulfur oxide removed could be misleading when comparing technologies that entail different percentage sulfur removal and coal characteristics. The parameter of $/ton of SO_2 removed is a direct function of sulfur content, heating value of coal, and percentage SO_2 removed. DOE should recognize this and develop a parameter to normalize this criteria for coals with different sulfur contents and heating values.

* * *

The submitter of a proposal should not be required to submit comprehenisve market penetration studies. Such studies pose substantial burdens especially to participating utilities that may have no capability to conduct such studies without incurring great cost. DOE has the ability to make such determinations about market penetration and widespread environmental advantages, and a requirement for the proposer to make these submissions would seem to be unnecessary.

* * *

Chapter 5

a. We recommend that the 60 day proposal preparation time be increased to 90 days, or perhaps even 120 days, in order to enable preparation of a comprehensive proposal.

* * *

1. We strongly recommend a 120-day proposal preparation time interval from the date of issuance of the solicitation. Many potential candiate sites will not seriously consider a clean coal technology project until the solicitation is formally issued. A sixty day proposal preparation period restricts severely the ability to obtain a site commitment and then to prepare the comprehensive document required by the solicitation. A 120-day proposal period will result in substantially improved quality and quantity responses.

* * *

We think that sixty days is a reasonable time period for proposal preparation.

* * *

We believe the proposal preparation time should be commensurate with the proposal requirements. Based on the proposal requirements of the 1986 PON we feel that 90 days should be allowed for preparation of a comprehensive proposal.

* * *

... believes the proposal preparation interval should be extended to no more than ninety days from the sixty days af-

forded proposers during the 1986 Program Opportunity Notice. This additional 30 days would afford an opportunity for the more thorough preparation of a proposal. In addition this extra time would mitigate any scheduling problems due to the Thanksgiving and Christmas holidays which may fall within the proposal preparation interval.

* * *

... ninety days for the proposal preparation time should yield more, and better, applicants.

* * *

2. A proposal schedule of 60 versus 90 days is insignificant compared to the time required for the other proposal steps, particularly the appropriation and negotiation steps. Also, in view of the two-tiered approach recommended above, the concern of 60 or 90 days time is more easily answered. Make each of the two stages 60 days.

* * *

Ninety days would be preferable to sixty days as a reasonable time frame to submit proposals. This extra month takes into account the many levels of approval a serious proposal such as this would have to go through.

* * *

... opposes the suggestion of a sixty (60) day limit, from the offical solicitation, to submit an ICCT proposal. DOE has stated it seeks to discourage ICCT proposals which are "less than fully prepared." The June 10, 1987, Federal Register Notice also indicates that "nothing in this Notice should be considered as definite, final or binding."Given this, and the fact that no funds for this program have been approved, it is unreasonable to expect significant effort be directed at preparing an ICCT proposal at this time. A minimum of 90 days and preferably 120 days is considered a reasonable preparation period. The suggestion that a preparation time longer than 60 days could delay the commencement of projects is shallow and contrary to DOE's desire to receive quality proposals.

* * *

We would favor a 90 day proposal preparation time. The additional 30 days on the front end would result in better prepared proposals to evaluate, and would probably result in no delays in project commencement.

* * *

... recommends that proposers be accorded a 90-day time period, from the date of issuance of the solicitation, to submit a complete proposal.

* * *

The ... electric system strongly supports a ninety day response period for proposal preparation.

* * *

We feel that a sixty day time afforded, as was in the case of the 1986 PON is somewhat short for preparation and submission of a detailed proposal of the magnitude the ... had submitted before. While sixty days may be adequate for a laboratory scale project, a good quality utility scale project proposal is very difficult to be prepared within such a short span of time. Especially so, when the proposal is an innovative one requiring more time to investigate. We therefore suggest that a minimum of ninety days, from the date of issuance of notice, be afforded to offerors for submission of proposals. We also believe that clear and detailed proposals up front will very well compensate the additional 30 days time during DOE's negotiation period.

* * *

The longer period of 90 days for proposal preparation is desirable and would assist in the case of larger projects requiring equity commitments from several partners. The longer interval for preparation should not be materially important in the commencement of projects given the relatively long evaluation and negotiation periods anticipated for project approvals.

* * *

... it is suggested that DOE allow a preparation interval of up to 120 days. Although this interval might delay the commencement of the actual project, negotiations with the par-

ticipants would probably be shortened, thus ensuring rapid commencement of the project once the award is made. Further, eliminating the 30-day review period before Congress, as was required for CCT, would shorten the overall approval period.

* * *

... members have expressed a strong desire for a preparation interval of ninety days. A longer preparation interval will allow possible funding participants the opportunity to explore "teaming" or "partnership" ventures and will probably increase the number of participants and the quality of the proposals submitted.

* * *

- It appears that 90 days would be a more appropriate time for preparing proposals. The comment is offered in light of the fact that several organizations may be attempting to organize a team during this period and that effort is time-consuming.

* * *

The proposal preparation time is directly related to the degree of completeness required for the team arrangement. A final teaming arrangement will require more proposal preparation time (e.g., 90-120 days). This increase in the time be

tween solicitation and proposal submission may be more than offset by a reduction in time necessary to negotiate a final agreement.

* * *

5.3.5 NEPA Strategy

... supports DOE's intent to use a NEPA strategy that includes both programmatic and project-specific impact analysis. We suggest that to the extent possible DOE develop a uniform method for offerors to respond to the requirements so as to minimize administrative delay in selection of projects and approval of preliminary designs of selected projects.

* * *

a. We support the environmental impact in the initial response to a Program Opportunity Notice. However, the program criteria should allow simplified submittals for repowering/retrofit projects at existing facilities that are already regulated by the USEPA. We recommend that in such cases the program criteria should allow submittal with the proposal of a summary matrix identifying each media, the estimated loading and the overall impact. After the initial screening, applicants should submit a plan to obtain the detail for an Environmental Impact Statement.

b. In order to streamline the environmental siting procedures and to avoid costly time delays at the state and local levels, we suggest that USEPA issue a general Permit-to-Operate for all medias (air, water, solid wastes) during the full demonstration period.

* * *

The NEPA strategy used in the 1986 PON was very satisfactory to ... and meets the needs for this critical area of the projects.

* * *

... is proud of the progress we have made in improving air quality. Any proposal that we would undertake to evaluate coal technology would have strict environmental monitoring requirements.

* * *

We are not in a position to comment on the NEPA strategy other than it appears to be working satisfactorily as is.

* * *

... experience is that the procedure followed in the preceding Clean Coal solicitation/selection process was workable and flexible, therefore, no change is recommended.

* * *

The requirement for including such information during eventual contractual negotiations will be sufficient.

* * *

It is believed the comprehensive approach giving consideration to both programmatic and project-specific environmental reviews as implemented in the 1986 PON is a reasonable approach.

A "fast-track" approach to environmental monitoring plans should be considered when data are readily available for the proposed technology. The specific content and intended use of any environmental data requested should be closely scrutinized to ensure the collection expense and reporting frequency are cost-effective.

* * *

We agree with DOE's approach of developing a pre-selection programmatic environmental impact analysis and the development of site-specific NEPA documents as was done for CCT. We encourage DOE to continue with this approach to preclude the time delay that would ensure if an Environmental Impact Statement for each project was required.

In the CCT solicitation, the DOE referred to the Synthetic Fuels Corporation Environmental Monitoring Plan Guidelines as a reference for developing an Environmental Monitoring Plan. We believe that these guidelines are extremely broad-based and may be more applicable towards the chemical process industry than the coal burning industry. For example, we question the benefit of socio-economic and employee health monitoring data as it pertains to the retrofit of a new technology to an existing electric power plant.

* * *

- It is difficult, entering into a back-fit technology demonstration effort, to say with assurance that the project will meet NEPA standards. Appropriate allowance or credit should be given to the project for attempting to demonstrate promising technology.

* * *

5.3.6 Repayment of the Government's Cost-Share

Consideration should be given to waiver of repayment of the government's cost-share by non-profit organizations such as universities, research institutes, and state and local governments. Alternatively, the requirement for at least 50% co-funding from such entities might be relaxed. Imposition of a too burdensome financial drain on non-profit organizations could eliminate the very groups that, because of their position at the forefront of the technology, are more likely to make the greatest and most cost-effective contributions to achieving the ICCT goals.

* * *

It is ... position that the anticipated benefits of the ICCT program, as set forth in the Invitation under Purpose of Meeting, fully justify the planned Federal investment, and that general repayment provisions are not required as a matter of fairness to the nation's taxpayers. There may arise situations in which a supplier of fuel, equipment, or special services may obtain a commercial advantage by participation in a project. It would be appropriate for DOE to develop special procedures for such cases; these procedures should cover both equitable repayment of federal investment and federal interest in proprietary design information.

For electric utilities, whether publicly owned, cooperatively owned, or investor owned, a specific repayment requirement would necessarily be reflected in plant cost allocations and, consequently, in rates. This would make participation in ICCT projects less attractive to utilities relative to alternative investments, and would tend to defeat the purposes of the ICCT program.

* * *

To further encourage electric utility participation, the DOE should consider waiving the loan repayment conditions in the cooperative agreement if a utility is not allowed full recapture of these funds in its rate base. Since the utilities provide the most immediate potential for deployment of the demonstrated retrofit/repowering technologies, the DOE should also consider full exception to the payback provision if deployment occurs in pre-set numbers of application within a certain time frame. Deployment after this time frame would carry a license fee for use of the technology to offset the cost to the government. This type of structure will provide both an incentive for utility participation in the demonstration program and an incentive for application during full deployment.

* * *

a. We recommend that DOE address the issue of how much financial risk they are willing to assume, versus the applicant's financial risk, if the project were a failure.

b. We recommend more flexible repayment terms, with partial repayment being an option, and which recognize that utilities may not be in a position to use, market or sell the resulting process because:

   - Their main business is not selling equipment or processes.

- Such new business ventures involve new more risky enterprises outside the utilities' core business of producing and selling electricity.

- Even if the project is successful, the new business may not result in a sufficiently greater return to justify the risk, than the return from selling electricity.

c. The repayment should preferably be derived from future sales of the new technology and not from the profits received from operation of the original demonstration project. This would increase the incentive to the utility for a successful demonstration project.

d. DOE should assist utilities in protecting proprietary information resulting from the project. Lack of this protection may eliminate another incentive for a utility to proceed with a project.

* * *

2. The repayment provision of the solicitation should be replaced by a grant. The repayment provision discourages process vendor participation in the Clean Coal Program because successful commercialization results in the project being penalized. The taxpayer will obtain a "fair return" when the technology is successfully deployed on a commercial basis because the net result would be cleaner air and reduced electricity costs.

* * *

... supports government participation in the economic results of a projects commercial success up to the extent of its initial cost share. We fully support the repayment terms suggested in the 1986 PON and we think that this approach makes sense for the U.S. taxpayers and industry in general.

* * *

Where savings can be documented due to a successful test of clean coal technology, we believe the government and sponsor could share in the benefits until the government has been repaid. Similar shared savings financing arrangements are being used in the energy conservation area and could be utilized to help finance clean coal demonstrations.

* * *

... urges DOE to reconsider the repayment of cost-share monies for ICCT demonstrations. DOE has noted the need for "sufficient flexibility to accommodate the constraints of different market sectors." Unfortunately, DOE still believes that repayment remains appropriate.

The existing utility regulatory climate is risk averse. Contemporary utility regulation (e.g., prudency reviews) discourages the risk taking demanded to fully explore ICCT. A utility decision to go forward with an ICCT, no matter how well intentioned, may result in substantial cost disallowance if the project is unsuccessful. Having to repay the governments cost share does nothing to mitigate this concern.

In view of this, and as demonstrated by DOE's previous experience with the 1986 Program Opportunity Notice, utility repayment of the governments cost share will have a chilling effect on participation by the industry. There is little incentive for utility companies to participate in ICCT demonstrations where monies must be repayed.

On the other hand, federal grants to utilities for up to fifty (50) per000cent of an ICCT proposal cost would serve to substantially minimize financial risk associated with investigating first-of-its-kind technologies. This would provide strong encouragement to utility companies interested in pursuing DOE's ICCT solicitation. Such encouragement is considered necessary for DOE's proposal to succeed in achieving commercial scale successes.

* * *

We would favor a repayment policy similar to that used by the Ohio Coal Development Office whereby repayment is tied to profits and/or fees derived from subsequent commercial sales of the technology.

* * *

... recommends that U.S. DOE unburden the demonstration project with the requirement to repay funds received from operation of the project beyond the term of the cooperative agreement, particularly so for technologies installed on existing coal fired power plants. Instead, repayment should be tied to profits/fees derived from subsequent commercial sales of the technology as is ... practice.

* * *

This may be the most difficult issue for the utility industry to accept. Due to the highly regulated environment that we conduct most of our business in, we feel that utilities should specifically be exempted from repayment unless there is a revenue stream generated that is outside of the existing rate structure.

* * *

On this issue, we feel very strongly that special consideration should be given to proposals from municipalities such as the ... or any other nonprofit organizations. The ... does not operate on the concept of profit. Whatever revenues are collected from various sources (utilities, taxes and other charges) all flow back into the various services to the Citizen. Therefore, a repayment formula based on profits from a proposed project is not applicable in the case of nonprofit organizations such as the .... We feel that DOE should make special provision in repayment conditions while recognizing this fact.

* * *

It is recommended that DOE use a direct cost-sharing grant program instead of the cooperative agreement cost-sharing with repayment system proposed. Private sources will be more willing to make larger and more long term commitments of funds with a grant system. The cooperative cost-sharing with repayment approach acts to prolong negotiations while at the same time causing uncertainty in how the terms of such arrangements can be structured to be advantageous to the private interests future obligations. Deployment of clean coal technologies which can yield a material benefit should be the primary objective of the proposed program. However, if DOE cannot by statute provide grants then the Program Administrators should at least be in a position to negotiate the

elimination of repayment provisions where private sources have and are expanding large sums in support of the technology's deployment.

* * *

Electric utilities are regulated by federal, state, and local government agencies. As such, utilities are permitted -- but not guaranteed -- to recover the cost of providing service to their customers and earn a reasonable return on investment. Reductions in the cost of service are passed on to customers in the form of reduced rates. It should be recognized that although a utility will not be allowed a higher rate of return on higher risk ventures such as the development of new technologies, a utility could be penalized for investing in a new technology which may be less than successful.

When retrofitting a technology to reduce emissions, an electric utility attempts to choose a system with the best economic balance between capital and operating cost, and one which will have minimal adverse impact on plant availability. Regardless, a retrofit technology to reduce emissions would not generate additional net revenue for the utility, but rather increase the cost of service to the customer. Innovative clean coal technologies for retrofit will hopefully moderate this negative cost impact.

In the Invitation for Public Views and Comments in the July 10, 1987, Federal Register, DOE recognized that constraints exist in the regulated business environment of electric utilities. Flexibility should be incorporated in the solicitation to recognize the following:

- For an electric utility, retrofit ICCT for emission control is not expected to provide additional net revenue, but could reduce the negative economic impact of adding emission controls.
- Electric utilities do not have the same opportunities for entrepreneurial profit on the strength of successful research efforts, as is the norm in non-regulated sectors.

Electric utility rates are based upon cost of service criteria; reductions in unit costs stemming from technological development would be recognized in reduced rates to customers. Little, if any, benefit accrues to the investor. But should the research fail or the attendant costs be much greater than expected, the penalty could be imposed upon the investor. Against such a backdrop there is a disincentive to invest in research and development.

- For a utility, a repayment provision poses significant uncertainty relating to the state's utility commissions to allow for repayment provision. There is no assurance that a state would allow a utility to repay the Federal Government when, in the opinion of the state, the state's ratepayers are assuming risks for a portion of a demonstration or first-of-a-kind project. The state might logically conclude the Federal Government should also assume a portion of the development costs, regardless of the outcome of the project. As an example, if a project proved to be successful, the state could take the position that, while its ratepayers benefited, so did ratepayers in another state if a utility in that other state ultimately utilized the demonstrated technology. Therefore, the Federal Government's share in a project could be interpreted as a contribution or a sharing of risk on behalf of ratepayers in all states.

  A utility will not be allowed to obtain a rate of return on the cost-shared portion of a project. Utilities are subject to rules and regulations governing the nature and conduct of its business activities and rates-of-return on its investments. A utility is not an equipment manufacturer. Accordingly, it is not in a position to benefit from the commercial sale, lease, manufacture, or licensing of these technologies to be commercialized. Utilities are not likely to be in a position to obtain or exploit a proprietary position in any aspect of these new technologies. If government funds for demonstrating these new technologies are required to be repaid, it would increase electric rates, and thus, can be construed as an additional tax to the ratepayers.

- Applying repayment provisions to a manufacturer who has already invested private funds to bring a technology to readiness for demonstration may place him at a competitive disadvantage in the future market, when other manufacturers could market competing systems with similar but slightly different approaches to avoid patent infringement.

- If it is deemed appropriate for a manufacturer to participate in repayment, the manufacturer should be allowed to fully recover its previous investment to develop the technology before the manufacturer is required to repay any funds to the Federal Government.

We, therefore, suggest that DOE consider the following scenarios in developing a flexible repayment policy:

a) If new technology is successfully demonstrated and then commercialized, other manufacturers will also enter the marketplace with competing ways of utilizing the same or similar technology. The competition would benefit both the utilities and its customers. Under this scenario, repayment to the Federal Government may not be appropriate, as the direct and indirect socio-economic benefits could more than compensate the nation's taxpayers for their investment.

b) A manufacturer may simply license the new technology to other parties and collect royalties from publicly financed demonstration. Under this scenario, it would be appropriate for DOE to require repayment provisions from royalties obtained from such licensing by a manufacturer involved in an ICCT Program.

c) A manufacturer may apply the new technology to the foreign market, either through licensing or sales through foreign subsidiaries and direct export. Under this scenario, it would also be appropriate for DOE to apply repayment provisions to profits obtained from such royalties or sales.

* * *

With respect to retrofit (and repowering) projects, the question of recoupment, or repayment, should be carefully reviewed. The ... believes that a requirement for recoupment will significantly lessen interest in and participation by the private sector in the program.

With retrofit installations, there are no new utility revenue streams resulting from the installation. Therefore, there is likely to be no net revenue stream available for federal repayment once the project is completed; indeed, parasitic power requirements will likely reduce actual revenues.

In the case of repowering, the only revenues that might be available would be incremental revenues that result from lesser capital costs or greater efficiencies when compared to the next most economical and efficient alternative available to the user (industrial or utility) of the clean coal technology. Past experience suggests that these incremental revenues are small or non-existent, particularly in the case of immature technologies which are expected to be more expensive than subsequent mature versions. We are pleased to note that the DOE has, apparently, recognized that a regulated utility would not be able to "repay" the government out of "profits" that regulatory commissions will not allow to be recovered. With this recognition, the government should simply state in the guidelines that repayment will not be required where regulatory commissions will not allow the utility to recover the government's cost-share.

Additionally, the character of clean coal technology projects also impacts the repayment issue. Generally, retrofit technologies are engineered modifications of existing equipment rather than new equipment that will be manufacturered and sold if the technology is successfully demonstrated. Where this is the case, a federal program will result in public knowledge about these engineered modifications rather than federal assistance in the creation of a proprietary position for an equipment vendor or a technology developer. In these instances, recoupment or repayment is not appropriate since the suppliers of goods and services have not achieved competitive advantage that would produce future streams of revenue; rather, they have contributed to the public good by supplying information and experience available for public use.

Most importantly, from the government's point of view, it would seem that the principal objective of the clean coal program should be to encourage the widespread use of successfully demonstrated technologies. By requiring recoupment, and thus making that technology supplier less competitive than others who will have access to the information and data from the government selected clean coal project, the government -- perhaps inadvertently -- dampens the ability of those with the greatest experience and understanding to introduce a cost-competitive item into the marketplace.

* * *

- In today's utility regulatory environment, financial risk is severely discouraged and frequently penalized. The repayment clause was one of the factors which caused ... to withdraw from the first round of solicitations. DOE is more likely to get support in the form of proposals if the repayment aspect can be eased, especially for technologies which produce nothing, but are only back-fits to existing units.

* * *

CLEAN COAL Technology

Appendix

ORGANIZATIONS REPRESENTED AT THE PUBLIC MEETINGS

ORGANIZATIONS REPRESENTED AT THE PUBLIC MEETINGS

Acurex Corporation
Advanced Fuels Technology Company
Air Products and Chemicals, Inc.
Albert E. Peters Associates
Allegheny Power
Allied Signal, Inc.
Allis-Chalmers
AMAX Research and Development Center
American Geological Institute
American River Transportation Co.
Argent Group
Argonne National Laboratory
ARINC Research Corporation
ARI Technologies, Inc.
Arkansas Power & Light Company
Arthur D. Little, Inc.
AVCO

Babcock & Wilcox
Badger Company, Inc.
Baltimore Gas & Electric Co.
BCR National Laboratory
The BDM Corporation
Bechtel National, Inc.
Bechtel North American Power Corporation
Bethlehem Steel Corporation
British Embassy
Brown & Root U.S.A., Inc.
Burns and Roe Enterprises, Inc.
Burns and Roe Synthetic Fuels, Inc.

Calderon Energy Co.
Canada, Embassy of
Canada, Government of, Energy, Mines and Resources
Centerior Energy
Central Illinois Public Service Company
Chas. T. Main, Inc.
Cities Service Oil and Gas Corporation
The Clean Coal Technology Coalition
Coal Cleaning Test Facility
Coaltek, Limited
Colorado School of Mines
Colorado-Ute Electric
Columbus Dispatch
Combustion Engineering, Inc.
Consolidated Natural Gas Service Co.
Consolidation Coal Company
The Consultants International Group, Inc.
Cyclean, Inc.

Danforth Corporation
DCE, Inc.
Des Peres Coal Co.
Domestic Policy Council (U.S. Government)
Dow Chemical U.S.A.
Dow Corning Corporation
Dravo Engineering Companies, Inc.
Dravo Lime Company
Dresser Industries, Inc.
D.R. Quartel, Jr., Inc.
Duquesne Light Co.

E.A. Zawadzki, Ltd.
EBARA International Corp.
EBASCO Services Incorporated
Edison Electric Institute
EER Corporation
EG&G Washington Analytical Services Center, Inc.
Electric Power Research Institute

Elkem Metals Company
Energetics, Incorporated
Energy and Environmental Research Corp.
Energy Conversion Alternatives, Ltd.
Energy Systems Associates
Energy Technology Associates
Environmental Action Foundation
Environmental Power Corporation
Environmental Protection Agency (U.S. Government)
Ernst & Whinney
EXPORTech Company, Inc.

Flakt, Inc.
FluiDyne Engineering Corp.
FMC Corporation
Foster Wheeler Corporation
Foster Wheeler Development Corp.
Foster Wheeler Energy Corporation
Foster Wheeler USA Corp.
Fuel Tech, Inc.

General Accounting Office (U.S. Government)
General Dynamics
General Electric Environmental Services, Inc.
General Motors Corporation
George Fumich Associates, Inc.
Green River

Haldor Topsoe, Inc.
Helipump Corporation
House of Representatives, U.S., Committee on Science and Technology
House of Representatives, U.S., Office of Doug Walgren
House of Representatives, U.S., Subcommittee on Energy Research and Development
Houston Lighting & Power Company

ICF/SRW
IDEA, Inc.
IGR Enterprises

Illinois Power Company
Illinois State Geological Survey
Illinois, State of, Department of Energy and Natural Resources
Illinois, State of, Washington Office
Independence, Missouri, City Power and Light Dept.
Indiana, State of, Department of Commerce
Island Creek Corporation

Johnson Matthey
Johnson, Michael K.
J.S. Alberici Construction Co., Inc.

Kaiser Engineers
KCI
Keay Industrial Services, Inc.
Kerr-McGee Coal Corporation
KKOB Radio
Korf Engineering GMBH
KRW Energy Systems, Inc.

Laclede Gas Company
Lake Shore International, Ltd.
Lodge-Cottrell
Los Alamos Technical Associates, Inc.

Masson Grimm & Burgum, Ltd.
McGraw-Hill Publications Co.
Meridian Minerals Company
Midrex Corp.
Midwest Ore Processing Company
Mississippi Lime
Missouri Public Service
Missouri, State of, Department of Natural Resources
Missouri, University of
Moriah Research Co.

National Coal Association
National Lime Association
New Hampshire, State of, Dept. of Environmental Services

New Mexico Institute of Mining and Technology
New Mexico Research and Development Institute
New Mexico, State of, Energy and Minerals Department
New York State Electric & Gas Corporation
Northern Ohio Consultants
NOXSO

Occidental
Office of Management & Budget (U.S. Government)
Ohio Edison Co.
Ohio-Ontario, Inc.
Ohio, State of, Department of Development
Ontario-Ohio Resources Corp.
ORI, Incorporated
OXCE Fuel Company
Oxide Recycle Corporation

Pasha Publications, Inc.
Passman, Richard A.
Peabody Development Company
Pellet Technology Corporation
Penn Coke Technology
Pennsylvania, Commonwealth of, Energy Development Authority
Pennsylvania Electric Company
The Peoples Natural Gas Company
Pillsbury, Madison & Sutro
Pittsburgh, University of
Plains Electric Generation & Transmission Cooperative, Inc.
Post Gazette
Potomac Electric Power Co.
Power, Inc.
Precision Management Analysis, Inc.
Process Technology, Inc.
PSI Technology Company
Public Service Company of New Mexico
Pyropower Corporation

Rall, Waldo
Raycon Research & Development, Inc.
Research-Cottrell
Rochester & Pittsburgh Coal Company
Roy F. Weston, Inc.
Rubinstein Engineering, P.C.

SAIC
Salvador, L.
Sandia National Laboratories
San Diego Gas and Electric
Sanitech, Inc.
Science Management Corporation
Senate, U.S., Office of John Heinz
Skelly and Loy
Southeast Missouri State University
Southern California Edison
Southern Company Services, Inc.
Southern Illinois University at Carbondale
Southern Indiana, University of
Southwest Research Institute
SPS
Stone & Webster Engineering Corp.
Systematic Management Services, Inc.

Tallahassee, Florida, City of, Electric Department
Tennessee Valley Authority
Tetra Corporation
Texaco, Inc.
Texaco Syngas, Inc.
TMS
TRW Space & Technology Group

Ube Industries (America), Inc.
Union Electric
United Engineers and Constructors
UOP, Inc.
Utility Engineering Corporation